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September 1988

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MacUser

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Connectivity

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LOOK AND FEEL
Copyright Implications of the HyperCard Interface

VIRUS PROTECTION
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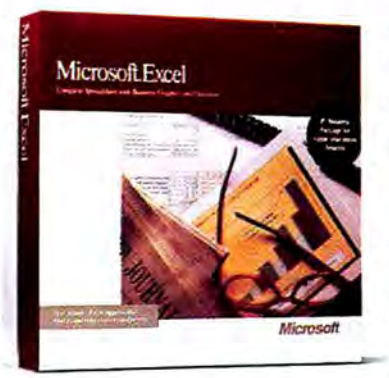
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Introducing Micros

It's been said that outdoing the competition is relatively easy. Outdoing yourself is the hard part.

We couldn't agree more.

Case in point: Microsoft® Excel. We took the most powerful, most popular spreadsheet program in today's Macintosh® market and made it history. Enter Microsoft Excel version 1.5.



It lets you customize your own menus and dialog boxes. Which is perfect for an environment with one-of-a-kind needs. Namely, your office.

And since customization is now easier for the independent software developer, you'll be seeing a lot more applications that use Microsoft Excel to give you specific solutions for your specific needs.

Microsoft Excel 1.5 also gives you full color support for the Mac® II. Which makes your daily spreadsheets look more like annual reports.

We've even built Microsoft Excel 1.5 to take advantage of MultiFinder,™ the program that lets your Mac do more than one thing at a time. In other words, you can have Microsoft Excel number crunching in the background while you're word processing in the foreground.

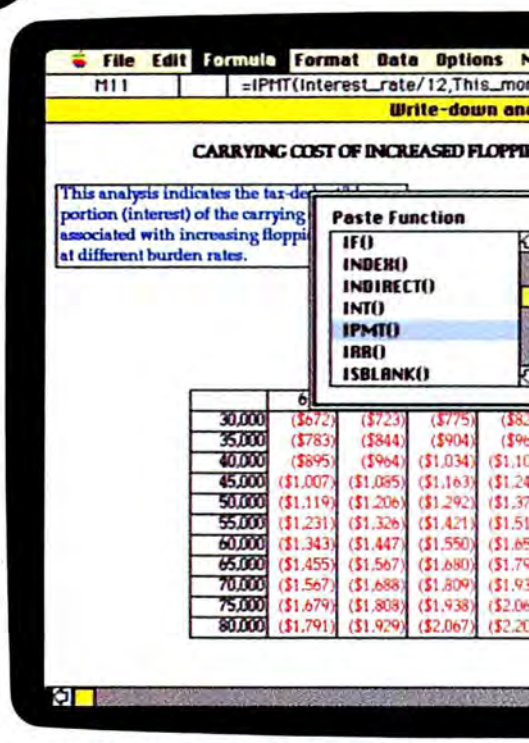
And if Microsoft Excel wasn't simple and powerful enough, we've added simpler tools for developing charts and 44 powerful new worksheet functions. All of which means that you do less work.

Of course, we're going to need a lot more room and you're going to need a lot more time to go over everything Microsoft Excel 1.5 has to offer. So we suggest you call (800) 541-1261, Dept. I37 for a copy of the Microsoft Excel 1.5 brochure and the name of your nearest Microsoft dealer.

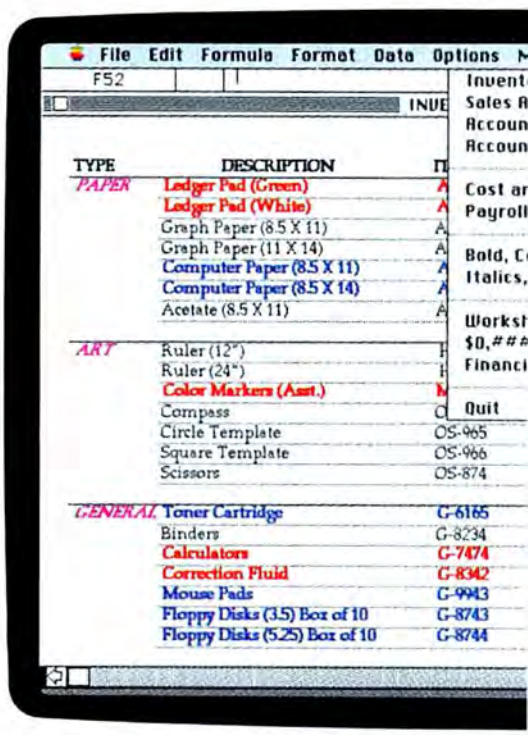
Over eighty-percent of all spreadsheets in use on the Macintosh are Microsoft Excel. And with all the enhancements of Microsoft Excel 1.5, we're bound to exceed that.

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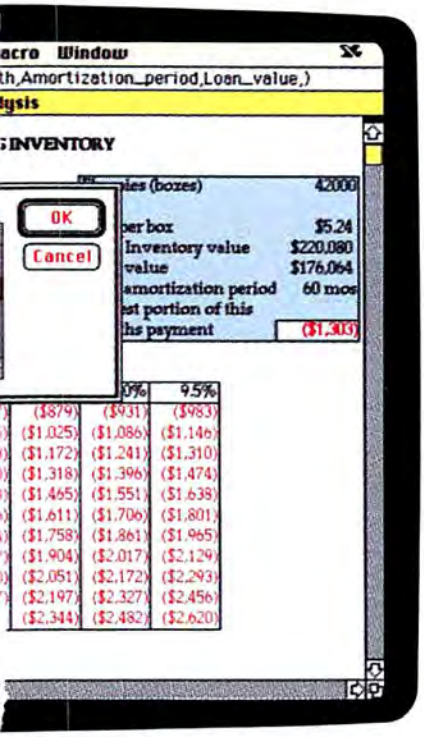


With our 44 new worksheet functions, you'll be able to b to develop a broad range of analysis. They run the gamu

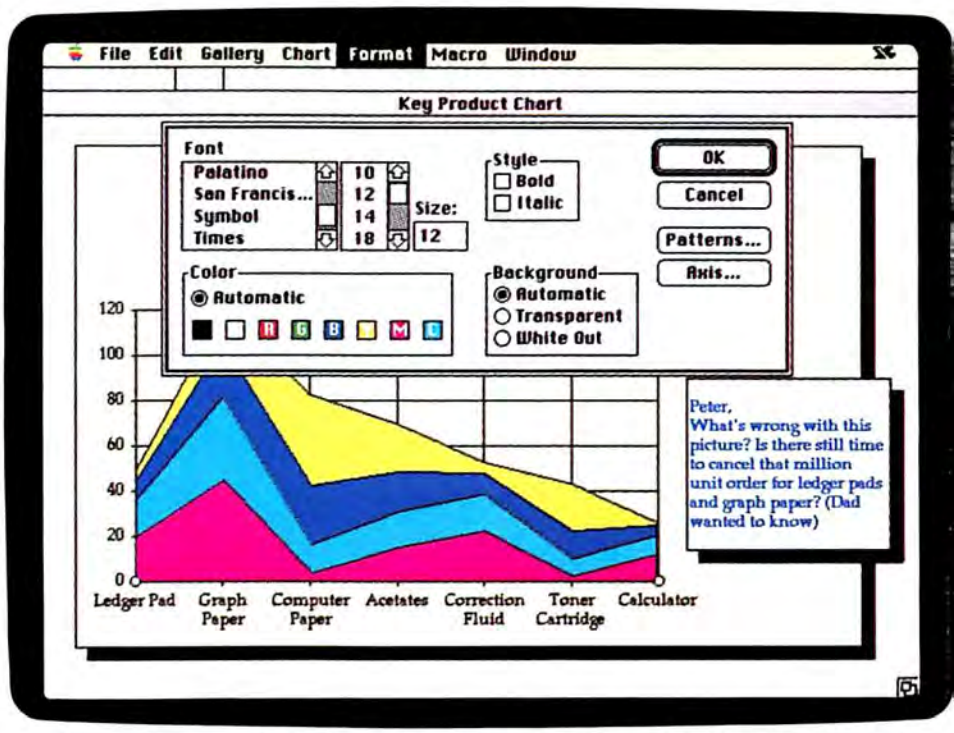


Customized menus enable you to go straight to the objec formats, commands, or other macros can be organized quickly and easily.

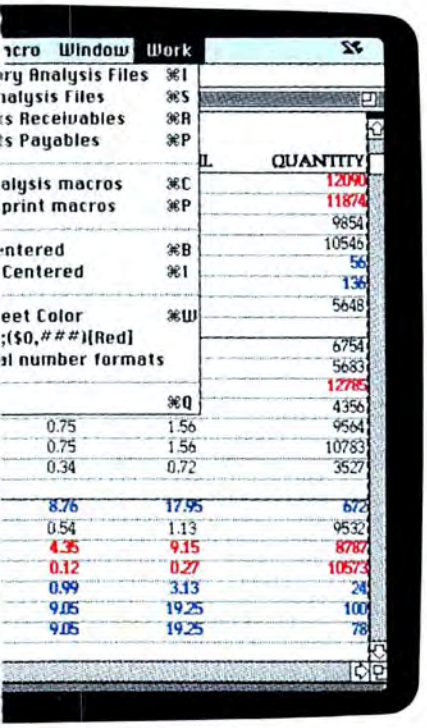
oft Excel version 1.5.



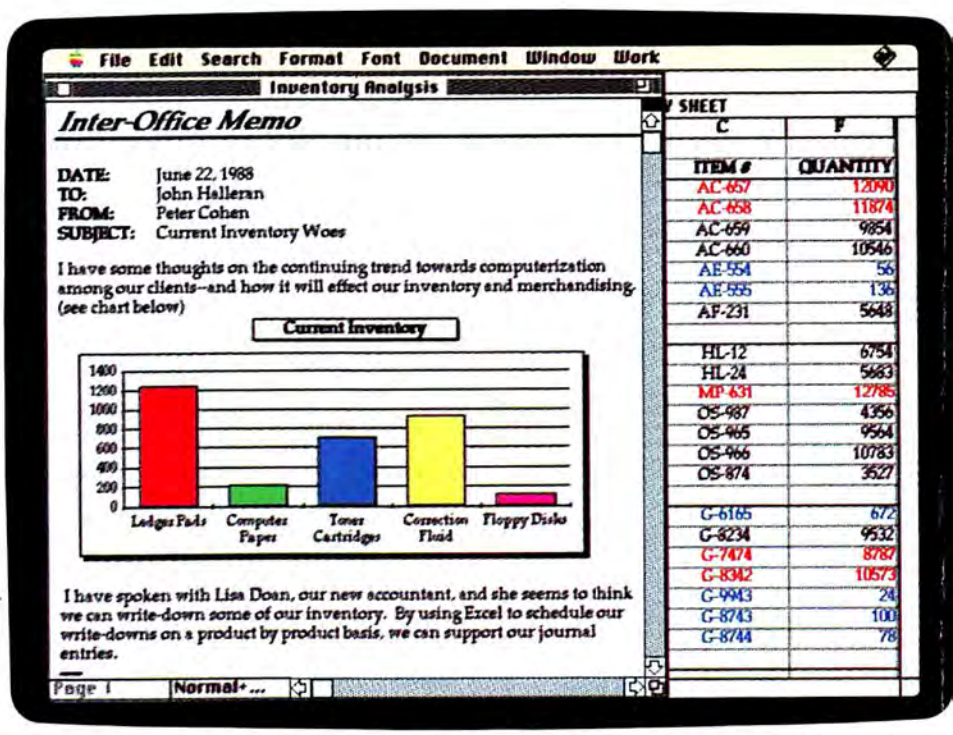
ild more powerful formulas that can be used from matrix math to depreciation functions.



You can enhance your charts with your choice of color, patterns, size or type just by clicking on the chart element you want to enhance.

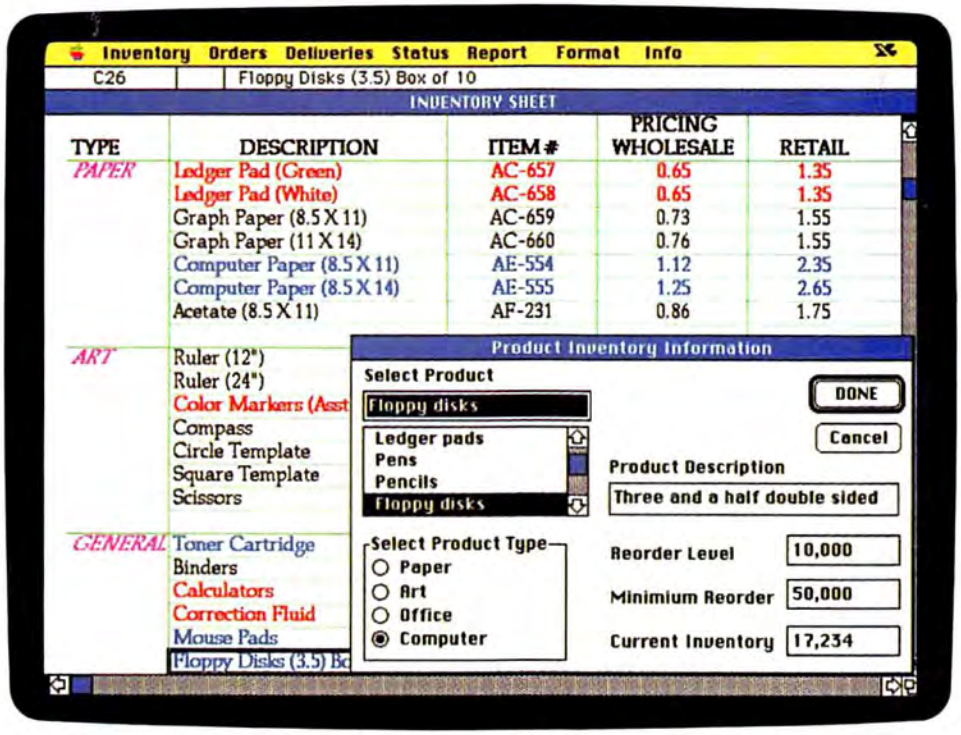


of your desire. Your most frequently used files, under a single menu so they can be accessed

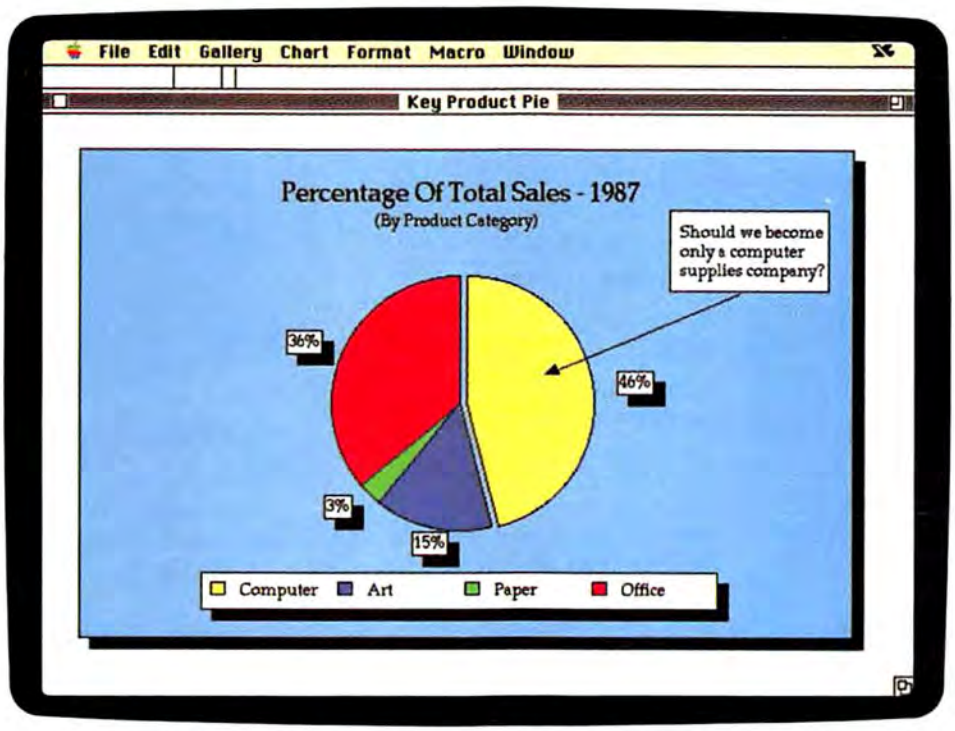


If you have a multitude of things to do, Microsoft Excel 1.5 is the program for you. Under MultiFinder, it will continue calculating and executing macros even when you move on to other applications such as Microsoft Word or Microsoft PowerPoint.™

Sooner or later someone was bound to exceed Microsoft Excel.



Microsoft Excel can be customized to meet your particular business needs. You can even customize menus and dialog boxes to prompt users unfamiliar with the program.



Your output will command attention when it's enriched with color, shadows, fonts or fill patterns. And floating text can be inserted to emphasize or clarify particular points.

CONNECTIVITY

CONNECTIVITY

Connect the DOS
by Henry Bortman

When connecting your Macs and PCs, sometimes the longest way 'round is the shortest way home. We present a roundup of the programs and gadgets you'll need to get your network up and running. **108**

Switch Hitters
by Daniel J. Rosenbaum

Horrors! It's the attack of the doppelgangers! Twin programs are sprouting up in both the Mac and DOS worlds! Here's a look at Excel, Word, WordPerfect, and PageMaker, and how they can take the dread out of your file transfers. **134**

Gimme an A!
by Steve Michel

So your Macs and PCs are connected, but they're still not on the same page — alphanumerically speaking, that is. Well, don't panic. These strategies and programs should help you get your nodes together. **148**

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by Steve Roth

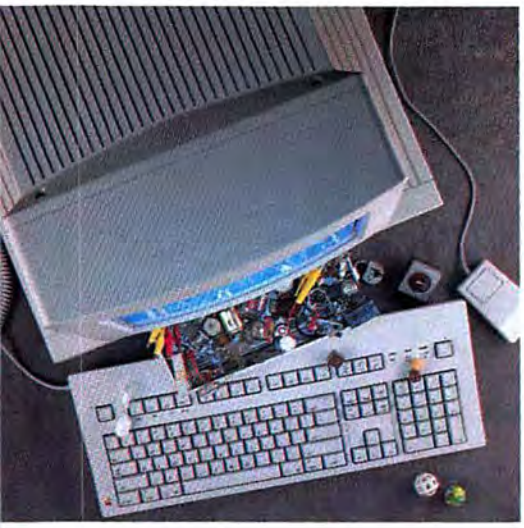
PICT, TIFF, PAINT, EPS, .PCL, .PIX. This isn't a recipe for alphabet soup, just some of the graphic formats on the Mac and DOS sides of your pictures. Moving among them may not be easy, but that's why we're here with some techniques and programs to help get your images across the great divide. **164**

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by Steven Bobker

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by Richard A. Skrinde

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Speling's not a problum if yoov got help. We cumpare Graham Speller, Spelling Coach Professional, Spellswell, and Thunder! in our own speling B. **224**

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by Robert R. Wiggins

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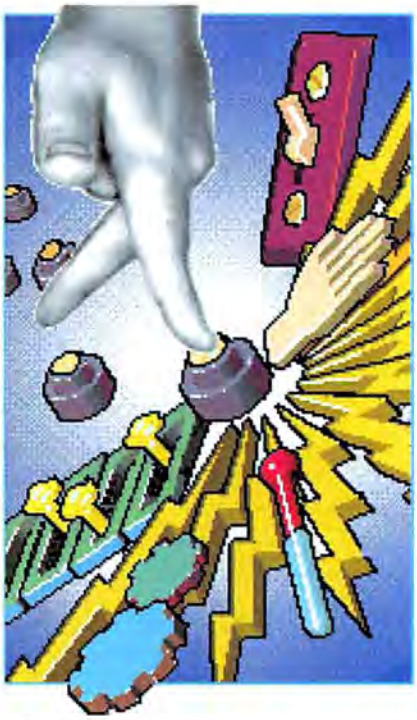
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photo by Charlie Franklin

MacUser

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PRODUCT ANNOUNCEMENTS AND UPDATES
MacUser is always looking for new and unusual products for our New on the Menu, News Line!, Quick Clicks, and Scrapbook sections, as well as for feature coverage, but even with our ears to the ground and our eyes straight ahead, we can't catch it all. (Heck, it's hard enough just moving in that position.) That's why we need your help. If you've got a product that you'd like to tell us about — whether it's new or an upgrade — send your letters and/or press releases to: Chip Carman, Technical Director, *MacUser* Magazine, 950 Tower Lane, 18th floor, Foster City, CA 94404.

TECHNICAL DIFFICULTIES AND HELP
Although we can't offer you any telephone assistance, *MacUser* welcomes your technical questions. If you've got a Mac question or problem, send it to Chris Espinosa, The Help Folder, c/o *MacUser* Magazine, 950 Tower Lane, 18th floor, Foster City, CA 94404. Chris works for Apple (in fact, he's been there longer than anyone), and if he can't give you an answer himself, he'll find someone who can. Because of the volume of mail we receive, we can't answer all of your questions so we also recommend that you take advantage of your local user groups. They're often an excellent source of information, and you can find the one nearest you by calling Apple toll-free at: (800) 538-9696, ext. 500.

TIPS, HINTS, AND PROGRAMS
We love to get tips and hints (on disk, please) from our readers. Any tips should be sent to The Tip Sheet, c/o *MacUser* Magazine, 950 Tower Lane, 18th floor, Foster City, CA 94404. We can't print every tip, but we try our best to pick the most interesting and representative ones for publication. We're also interested in hearing from any programmers who are interested in contributing to our utilities disk series or labs benchmark disk series. If interested contact Chip Carman, Technical Director, at the same address.

WRITING FOR MACUSER
If you have an idea for an article you'd like to write, we'd like to read it. Send a query letter with samples of your writing (published if possible) and some information about your background to Louise Kohl, Executive Editor, *MacUser* Magazine, 950 Tower Lane, 18th floor, Foster City, CA 94404. No calls please. Since we rarely buy unsolicited manuscripts, save yourself some work, and don't send us a completed article without writing first. Please allow 4-6 weeks for a reply.

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ADVERTISING
Associate Publisher Jeffrey Miller
Assistant to the Publisher Dori Harshman
National Advertising Director Hjordis Fammestad (415) 378-5603
950 Tower Lane, 18th floor, Foster City, CA 94404
National Telemarketing Manager Kathleen F. Lyman (415) 378-5692
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R STARDOM.



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"And he's up, on one finger. It's installed! I've never seen this before...A new record of 59.6 seconds!"

Chet: And with just a few more clicks, you get print spooling. It's no wonder these folks have the time to develop such incredible maneuvers!

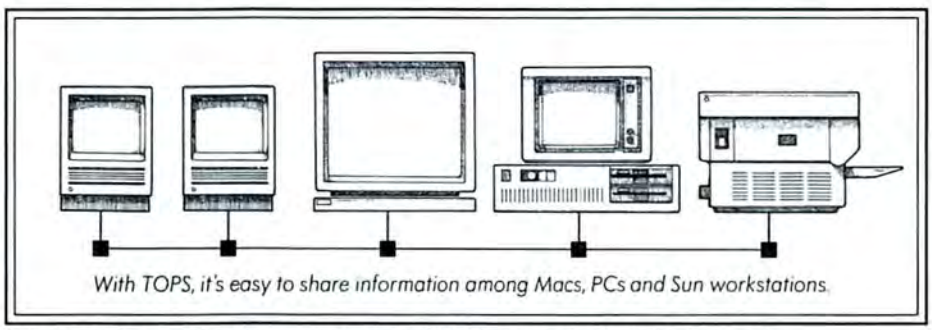
Frank: Right you are. And that means users not only share their printers, but with TOPS they can share their hard disks and MS/DOS files too.

Chet: But you know me Frank. The thing that excites me the most is the price. TOPS/Mac costs only $249 per node, and there's no need to purchase an expensive dedicated file server.

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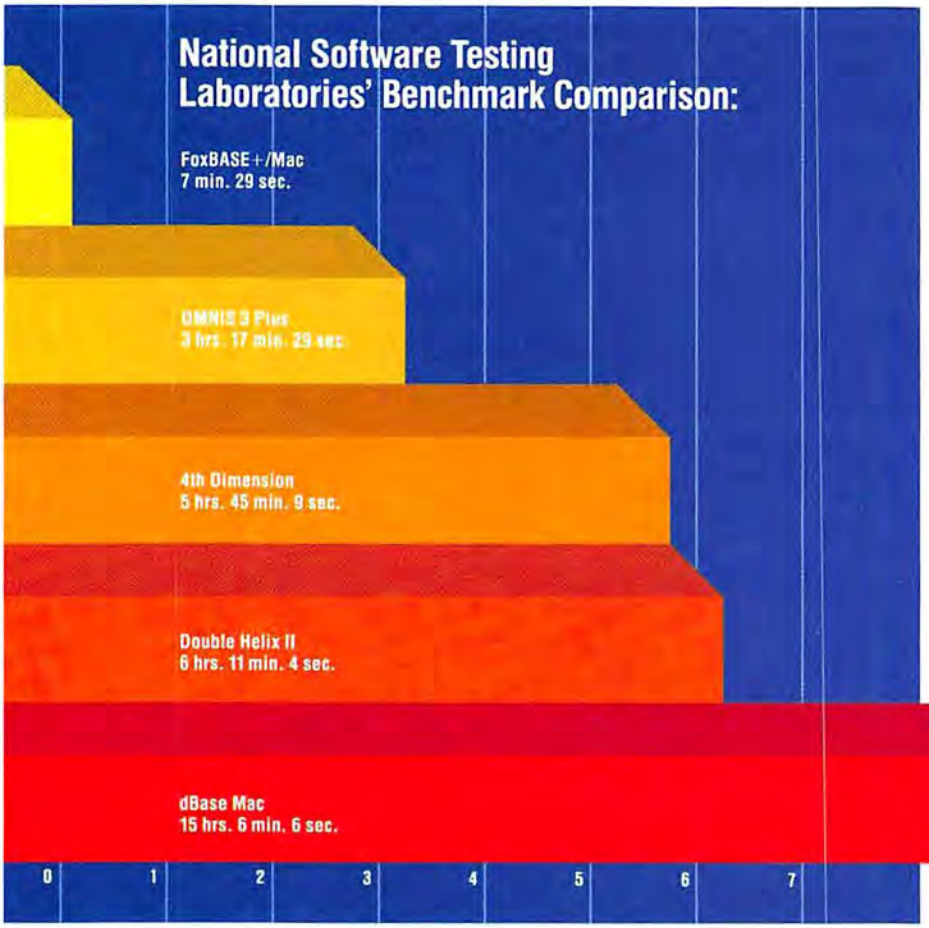
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Mac's Détente with MS-DOS

If you can't beat 'em, join 'em. Although we're confident that the Mac is better than any other personal computer, it's clear that the IBM/Microsoft's MS-DOS standard is beating the Mac in the marketplace. There are about half a dozen MS-DOS computers out there for every Macintosh. And until either Apple comes out with less expensive Macs or someone else makes good, cheap Mac clones, IBM's microcomputer standard, which is supported by a huge army of low-priced clones, will probably continue to prevail.

If you can't beat the MS-DOS standard, how best to join it? Well, there are lots of good ways, from sharing files to networking to actually running MS-DOS on a Macintosh. Bastions of IBM-and-compatible computers are getting the good word that hostilities between MS-DOS and the Mac can now end. By taking advantage of the wide array of Mac-to-IBM connectivity products, you can use Macs in harmony with MS-DOS to create a "best of both worlds" strategy for corporate microcomputing.



WHEN MAC IS BETTER

Macintosh technology is better suited to some tasks than MS-DOS. In fact, a growing number of important programs run *only* on a Mac. Macintosh connectivity enables companies to add Macintosh technology without abandoning their existing MS-DOS systems. People once viewed Macintosh and MS-DOS as mutually exclusive, but connectivity has bridged that gap.

MS-DOS RUNS ON MACS, BUT WHO CARES?

Today, several vendors offer IBM-compatibility products for the Mac. You can run MS-DOS on your Mac with products such as the add-in coprocessor boards for the Mac SE and Mac II from AST and PerfecTEK or with the fascinating SoftPC product for the Mac II, which emulates an IBM PC XT completely in software. With one of these coprocessors and an MS-DOS disk drive, you can turn your Mac into an MS-DOS clone, albeit a pretty pricey one.

Actually, the appeal of running MS-DOS on a Mac has faded a bit since the issue was first raised in the early days of the Mac. I guess it's another case of when people couldn't get it, everyone wanted it. Now that it's available, nobody's interested. Running MS-DOS applications such as 1-2-3 doesn't appeal to most Mac users, who tend to prefer Mac applications. After all, Mac programs are almost always better than their MS-DOS counterparts. As a result, the focus in the Mac universe has moved away from running alien application programs and toward ways to work with the data generated by popular MS-DOS applications.

In many cases, as long as the data is compatible, the applications don't need to be. Mac users don't need to *run* Lotus 1-2-3. Far better to take 1-2-3 data files and read them into the Macintosh's Excel — a more powerful program that's also easier to use. After the information has been reworked in Excel, the data can be resaved in its original format. In many cases, you can manipulate data created by MS-DOS applications within Macintosh applications and then return it to MS-DOS users in MS-DOS formats.

THE MAC HAS GOOD CONNECTIONS

The appearance of Macintosh/MS-DOS connectivity products means that companies that once frowned on the Mac are taking a second look. And what most attracts MS-DOS users to the Mac is its versatility for connecting to other systems. Apple (and a host of third-party developers) have set about finding ways to hook Macs up to everything from IBM-and-compatible micros to DEC and HP minis to IBM mainframes to Cray supercomputers.

In the months to come, we'll provide ongoing coverage of Macintosh connectivity. We'll use MacUser Labs' newly formed Workgroup Systems Lab (a co-venture with our sister publication *PC Magazine*), as well as our own Labs and network facilities, to provide you with the latest product comparisons, how-to articles, and computing strategy articles.

WHAT'S IN THIS ISSUE

Connectivity is such a broad and complex topic that it's going to take several issues to tell the whole story, even with issues as big as the one you're reading (which I'm happy to report is our largest ever). We've started by tackling the area that's relevant to the greatest number of our readers: connecting to MS-DOS. This month's special report shows you various ways

to use Macs and MS-DOS computers together. In this regard, you need to think about two things: 1) transporting the data between the Mac and the IBM; and 2) being able use the data once you get it where you want it.

Our Senior Technical Writer, Henry Bortman, addresses the first concern in "Connect the DOS." He describes various ways to get your data across the compatibility barrier, such as hooking up IBM-style drives to your Mac or sharing data using a modem or network.

To address the second concern, we've put together three related articles: "Gimme an A," "Moving Pictures," and "Switch Hitters." "Gimme an A" discusses transferring text and numeric data; "Moving Pictures" guides you through moving graphics between the two systems, and "Switch Hitters" compares four programs (Excel, PageMaker, Word, and WordPerfect) available in both Mac and MS-DOS versions. Rounding out our coverage are two more MS-DOS–related articles: "Outfoxing dBASE," which is a review of FoxBase+/Mac, a database program that enables you to run dBASE III PLUS applications on the Mac, and "A Small Case of the Blues," which tells Macintosh users who need a lightweight traveling companion how to take advantage of low-cost MS-DOS laptop computers.

> You probably don't give a hoot about MS-DOS, and why should you? Don't think all this hoopla about MS-DOS means there's nothing here for the Mac faithful.

WHAT'S NEW IN THIS ISSUE?

Now, a lot of you probably don't give a hoot about MS-DOS, and why should you? Don't think that all this hoopla about MS-DOS means there's nothing here for the Mac faithful. The sheer size of this issue means we can present more information than ever before. We're taking advantage of this opportunity to start several new sections in *MacUser* devoted to major areas of Macintosh technology. The new attractions are: "DTP," "HyperSpace," "A/UXiliary Info," and "Rhythm 'n' Views."

"DTP" is a monthly section devoted to desktop publishing and the art and

4Runner

4Runner

We were sick and tired of having to open several folders every time we wanted to run our applications. We also hated having to search all over the disk for the same documents... day after day. We actually started to (gulp) *hate* the Finder.

We realized we were wasting a lot of time in the Finder doing the same things every day. We wanted to show the computer *once* what applications and files we used for our everyday tasks, and where they were located. We wanted to save descriptions of these tasks in 'sequence' files. We wanted to be able to double-click these 'sequence' files from the Finder and have them run the applications with the files needed to do the given task. We wanted all of this and more...

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S I G M A D E S I G N S

science of graphic communications. Desktop publishing is a primary Mac technology, and we're going to keep you up-to-date with hands-on information in this section. Another major area of interest to Macintosh users is HyperCard. *MacUser* has already devoted lots of coverage to HyperCard in our "Flash Cards" and "Card Tricks" sections. This month we're starting the new "HyperSpace" department, which will include "Flash Cards," "Card Tricks," and other important HyperCard information such as this month's piece on the legal implications of "look and feel." Also debuting this month is "A/UXiliary Info," a short section devoted to Apple's A/UX version of UNIX. As if that weren't enough new stuff, I'm also pleased to announce "Rhythm 'n' Views," an every-other-month music column by Freff, whose column in *Keyboard* magazine recently won him a Maggie magazine award for best column in a consumer magazine. Music is another thing that the Mac does better than any other system, so we wanted to make sure it gets regular attention in the magazine.

Music is another thing that the Macintosh does better than any other system, so we wanted to make sure it gets regular attention in the magazine.

AND NOW FOR SOMETHING COMPLETELY DIFFERENT

Move over Dvorak. You've got some company at the back of the book — our new "Scrapbook" section! No, this isn't reserved for photos of the staff taken at inopportune moments. Instead, it's a lighter look at the world of computing and computer publishing. It features such regular sections as "Local Heroes," "Nerd's Eye View," and "Bright Ideas," and we hope to get you involved by soliciting your responses. Mind you, we don't take this section lightly. After all, publishing a magazine is serious business, we think. Anyway, I hope you enjoy "Scrapbook" along with our other new sections. Happy reading!



FREDERIC E. DAVIS/**EDITOR-IN-CHIEF**



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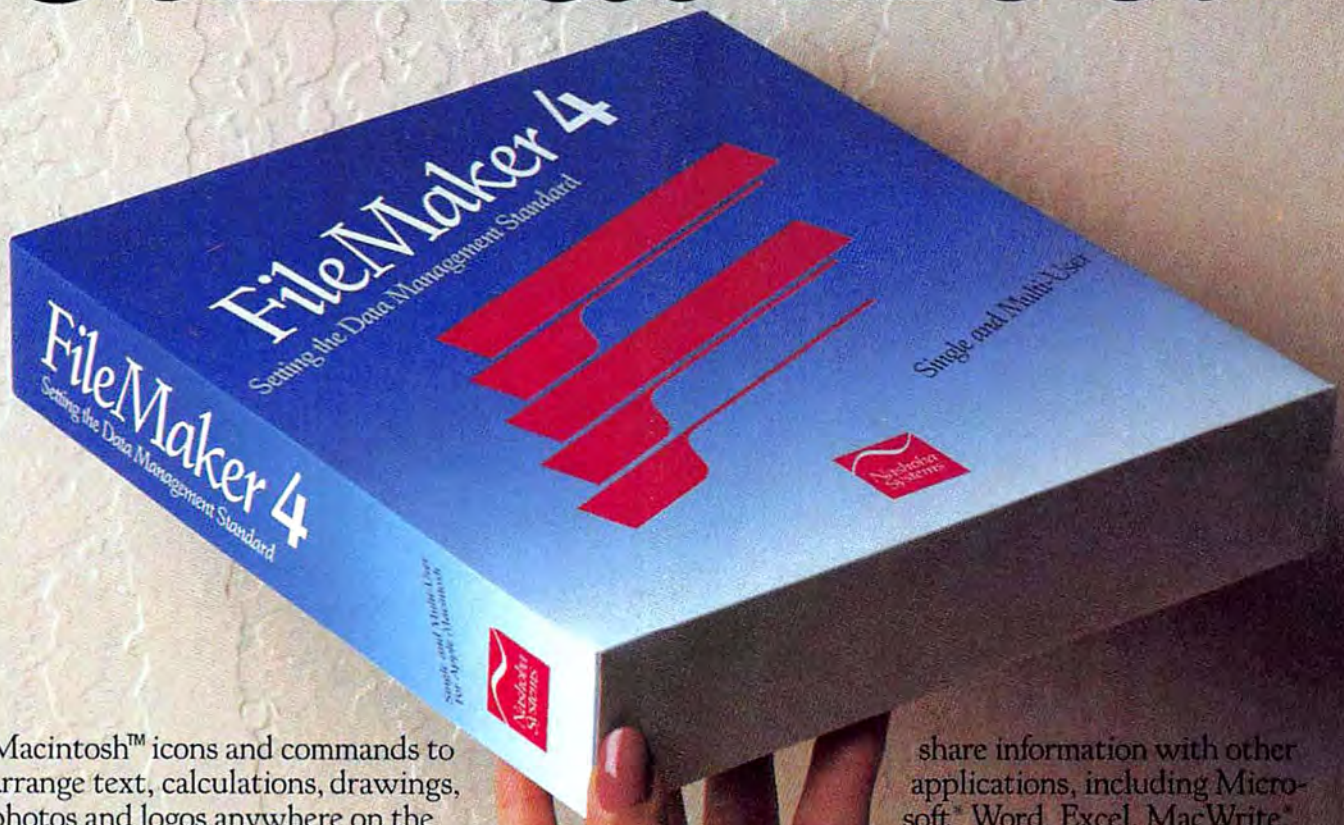
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Letters

Since Apple seems to have lost the MiniFinder resource in the latest System, Paul R. Mueller of Muskego, WI, wonders what we'll call the capsule reviews found in the back of our magazine. We're working on a new name for the section; so far, the leading contenders are Lots O' Li'l Reviews and House of Syllabi. Suggestions?

We're always happy to hear from our readers on issues of interest to the Macintosh community. Write to Letters to the Editor, MacUser, *950 Tower Lane, 18th floor, Foster City, CA 94404. All letters become the property of* MacUser *and we reserve the right to edit any letters that we print.*

FIRST STRIKE

Neil Shapiro was overly zealous in his bashing of Richard Brandow (May '88). We have Mr. Brandow to thank for one important thing: His virus was (mostly) benign. By releasing a harmless virus into the Mac community, he increased awareness of the perils of viruses before they could do real harm. What better way to alert a community about infectious diseases than to release one with no ill side-effects? What if the Scores virus, which is extremely malicious, had been released first?

Computer viruses may be new to the Macintosh, but they are not new. It is naive to think that viral warfare would never invade the Mac community. It is ironic, however, to think that a "Universal Message of Peace" could be a declaration of war. Thank you, Mr. Brandow, for unwittingly throwing the first punch and waking us up in time.

BARRY LANGDON-LASSAGNE
ALEXANDRIA, VA

Maybe Mr. Brandow meant no real harm when he unleashed his peace virus, but we all know where good intentions sometimes lead. True, Brandow did alert the Mac community to viruses, but he may also have given other hackers the idea of playing around with them, "improving" upon earlier strains. See the feature "Razor Blades in Apples" in this issue to find out more about this whole fiasco. — KC



HEC OF A DEAL

A sidebar in your June '88 cover story on high-capacity hard disks referred to the capacity of 100-megabyte hard disks as a *centamegabyte.* I think 100 megabytes is correctly called a *hectomegabyte,* but I'm not absolutely sure that *hecto-* and *centi-* are approved by the International Bureau of Weights and Measures. These days, they prefer prefixes for powers of ten that are divisible by three (*kilo-, mega-, milli-,* etc.), and they don't like combining prefixes (*millimicro* is out, *nano* is in). Your problem is that "Who Needs 0.1 Gigabytes?" would not have been a very catchy title. It was still interesting, even for someone like me who would rather buy a car than a 100-megabyte drive.

SIMON S. GOLDENBERG
CARRBORO, NC

"Who needs a centamegabyte?" No one — not even the most budget-conscious Mac user — already has at *least* a forty-centamegabyte drive. My SE came equipped with an 80-cMb floppy drive and a 2-kcMb (kilocentamegabyte) external drive. I'd be happy to trade further consultation on the use of measurement prefixes for any spare *hecto*megabyte drives you might have left over from your otherwise excellent review.

DAVID WHITMAN
NORTH WALES, PA

Centamegabyte? *It was actually just a misspelled reference to that new CD-ROM disk containing the complete works of Danielle Steel:* Sentimentalbytes. *Never mind.* — JZ

IT'S A SMALL WORD AFTER ALL

Does "The computer for the rest of us" really mean "The computer for the rest of U.S.?" Don't programmers know that in Europe we have different keyboard layouts and have a different way of expressing the time and the date? There is a German version of Word that works fine, but you can't use any dictionaries besides the German one for spell-checking, so I will have to transfer this letter to Ready, Set, Go! to proof it.

ALBERTO LENZ
ZURICH, SWITZERLAND

ONE FOR THE DEALER

Cynthia Merman (Letters, May '88) needs a new Apple dealer to upgrade her 400K disk drive down there in St. Louis. Until recently, I was the service manager of a large Apple deal-



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Letters

ership, and we did many 800K drive upgrades. We were never concerned with whether the old drive worked when we did an upgrade (as Ms. Merman's dealer was). Just to make sure that we weren't going against Apple policy, we checked with Apple Service Administration. Their big concern was that the returned drive was packaged properly, not whether it worked. We always just figured that Apple was using them to build an artificial reef somewhere.

We also tried to keep turnaround time for any Apple repair at two days or less. A one-week wait is unacceptable for almost any repair.

There must be more than one Apple dealership in a city the size of St. Louis; I would definitely recommend doing a little shopping. If all the St. Louis dealers are like that, I'm available.

TOM STONER
ANN ARBOR, MI

INDUSTRY HEAVYWEIGHTS

Observant readers of *MacUser* will have noticed the new pictures of your columnists. As the Mac has flourished, so have they! I mean, how many wine and cheese parties are those software developers throwing out there?

MIKE WHATLEY
ALEXANDRIA, VA

Watch for our soon-to-be-annual swimsuit issue. And no, in response to a similar letter from pseudonymous Spy-plagiarist "Jack E. Gleason," none of our columnists were separated at birth. — JZ

SPINE-TINGLING

Many people save their precious copies of *MacUser* in vertical magazine files in which you can't see the issue date. Would it be possible to put the date at the top of the magazine spine?

HANS MAHNCKE
HONG KONG

Just store your issues upside-down? — JZ

ACCOUNTING FOR TASTE

We're frustrated. While our art department raves about all their great new programs for their Macs, we in bookkeeping must slave in a vacuum. Why is accounting being virtually ignored? Here's a wish list for accounting software. We need both ease of use *and* power, and seamless integration of all modules. The software should have open periods — not just one or two, but 12 or 24 — and flexible reporting (why do accounting programmers assume they know how we need our reports?). The vast majority of small businesses need payroll more than inventory — why, oh why, oh why, is a good, full-featured payroll module so hard to integrate? Finally, $700 or more per module is robbery — a fully integrated package shouldn't cost more than $600 for the whole thing.

Most of the local computer stores still sell PCs for dedicated accounting purposes. Somebody in the software business better wake up — for the Mac's sake, anyway.

BOOKKEEPING DEPT.
WILLIAM ISAAC CO.
PHOENIX, AZ

The bottom line: We'll be reviewing some hot new packages shortly that should bring a smile to your balance sheet. — JZ

TILTING AT WINDMILLS

I'm not at all surprised that Neil Shapiro feels ripped off by the failure of most users to pay for Tilt, his shareware game ("Paying for What You Get," June '88). What I am surprised at is that Neil, or anyone else, would bother to do all that work with such a slim prospect of reward.

I think shareware writers are, at best, people who don't value their time highly. At worst, they're outright fools. I know all the arguments about the wonderful programs that wouldn't exist today but for the shareware concept. I'm not saying I'm not happy to see a few guppies in the software business, intermingled among the sharks. But it's still a foolish waste of effort to write shareware.

It's foolish because one of the unfortunate things about computers is that they give everyone the opportunity to be slimeballs. All a shareware recipient has to do is "forget" to pay for shareware, to "forget" that people like

Neil want to buy groceries and send their kids to college just like the rest of us.

Ultimately, all you have to do is convince your conscience that stealing isn't stealing if it's done electronically.

STEPHEN MORRILL
TAMPA, FL

DOES IT DO WIDOWS?

I want to thank you for a magazine that is, without a doubt, the only Mac magazine I can read cover to cover several times and find something new every time. A question has been nagging at me, and I thought it was time to consult The Source. There's a possible faux pas in Word 3.01. Take a close look at the Page Setup dialog box and tell me if you see what I see: "Widow Control?" Since when does Microsoft think they can control widows?

RANDY GAMAGE
DAVIS, CA

No faux pas, and apparently no pas de deux vis-a-vis vous and le manualle, either. A widow *is what you call the last line of a paragraph when it ends up all by itself at the top of a new page or column. Traditional typographic design calls for avoiding widows whenever possible, which is why Word includes a Widow Control feature (and which is why our normally mild-mannered Managing Editor Nancy Groth can occasionally be heard shouting, "OK, we've gotta kill a few widows right now!").* — JZ

ADIOS, AMIGA; ST ELSEWHERE

I would like to compliment you on your coverage of music software and hardware. Paul Lehrman's review of the Apple MIDI interface ("Itty Bitty MIDI," June '88) was right on the mark. But are you aware of the impact that the Commodore Amiga and Atari ST computers are having on the "artist turned computer-user" community? The Amiga has color, multitasking, a desktop metaphor similar to the Mac's, and a price tag two-thirds less than that of a stock SE! And the ST has similar capabilities.

Don't get me wrong; I love my SE. When I bought it last summer, I concluded there wasn't a software base large enough to warrant taking a risk on either the Amiga or the ST. A year later, I wonder how many musicians and artists are taking a hard look at these computers and deciding that, while the Mac is surely a sleek machine, the competition has more than a few nice curves of its own.

JIM LENO
ROSEBURG, OR

The Amiga and Atari ST are the Rodney Dangerfields of the industry — they don't get the respect they deserve. Maybe the Amiga, like the ST with its Magic Sac, will someday be able to run Mac software and will give the Mac some competition. — KC

KEY EXCHANGE

It was great to see Sal Parascandolo's article on keyboard repairs ("Chairman of the Keyboard," June '88). After serving me faithfully since January, 1984, my *A* key bit the dust last September. The local Apple service department told me it would be $5 for the key switch and $50 for labor. (Have you ever laughed at someone until they hung up the phone?)

Not being able to solder to save my own life, I opted for an easier solution that your article hadn't mentioned: jumper wiring.

After opening the keyboard case, remove the key cap, locate the two switch contacts of the bad key, and use a small piece of electrical tape to attach a wire to each contact. Use the thinnest wire you can get. Run the wires around to the top of the keyboard through the bottom center screw hole. Attach one wire to a thin metal washer that's large enough to fit around the key switch slider. Loop an exposed section of the second wire around the top of the key switch slider and replace the key cap. Reassemble the keyboard case minus the bottom center screw. Presto — the key works.

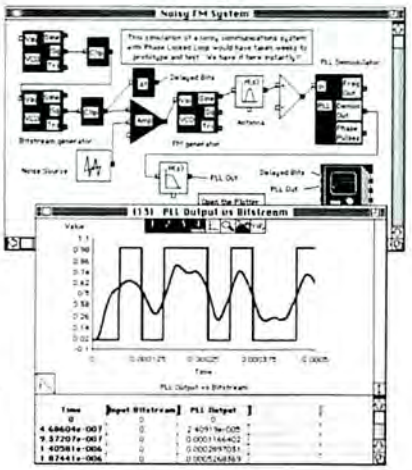
ED SANCHEZ
MAHANOY CITY, PA

Jumper wiring is OK for a quick fix, but I'd go back and solder the new wiring. It's really not that hard.
—Salvatore Parascandolo

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Letters

In "Chairman of the Keyboard," there was an example that was obviously out-of-whack. You state that if your *X* and hyphen keys are working, you should get the pattern *X-X-X-X-X-X*, but if a key is broken you'll get the pattern *X-X-X-X-X-X*. It seems to me that both patterns are the same.

DANIEL P. CLARK
PHILADELPHIA, PA

Well, if it ain't broke, don't fix it. —RI

The thing that breaks my heart is that you guys recommend removing key caps with a paper clip — not a very elegant user interface. Enclosed is a key cap removal tool that will make your next keyboard operation a little less nerve-wracking.

CHARLES L. HOHMAN
IRVINE, CA

Mr. Hohman's Caps Off tool is available for $4.95 from The Design Marketing Group, P.O. Box 16006, Irvine, CA 92713; (714) 549-1725. But don't retire those paper clips yet — check out our new Scrapbook section for ten ways to make the most of them. — JZ

COUNTERINTELLIGENCE

Your editorial reply to Bart Zantzinger's letter (May '88) included a list of oxymorons, including *military intelligence*. As a Lieutenant in the Air Force, I can take a joke as well as the next guy, but there are several hundred thousand dedicated men and women working hard to protect our mutual freedoms who might be offended. Incidentally, a recent survey showed that military officers have more education, on the average, than their corporate counterparts.

STEVEN A. BROWN
KAYSVILLE, UT

No offense was meant to our men and women in Defense. We, of course, meant to cite a different oxymoron: corporate responsibility. — JZ

IT'S A MAC, MAC, MAC, MAC WORM

Write-Once-Read-Many (WORM) technology will never be accepted. It works upstream against the flood of human behavior. WORM can give users inexpensive access to megabytes of storage, but it can never be erased. It's human to make mistakes, and it is also human to note these mistakes and to toss them out as junk. Writers throughout the ages have had a wastebasket nearby to toss mistakes into. Corporations today dump out tons of paper every week. Who wants to be reminded of mistakes nestling intertwined, fat and ugly, like worms in some dank corner of a WORM disk? If WORM becomes standard technology, it will inundate us with old files that should've been snuffed ages ago but that obdurately insist upon living. Yes, we all want megabytes of cheap storage. No, we don't want our first drafts etched in stone.

R. DAVID PIKE
JERSEY CITY, NJ

Even with a WORM drive, documents are still developed using hard or floppy disks as the primary storage medium; they're transferred to optical media only when the final draft is finished or needs to be archived, distributed, or backed up (see the article "Optical Horizons" in our June '88 issue). And sometimes it's actually useful to have unerasable, unshreddable media (as Ollie North learned the hard way). — JZ

TUBE TUBER

There seems to be an interest in the latest TV show to show and/or use a Mac. On a recent episode of *O'Hara*, a Mac was seen *and* used.

ELVIN S. RODRIGUEZ
NORTH BERGEN, NJ

BANANA SPIEL

In your June '88 New on the Menu section, you mentioned a screen filter called the NoRad dB 60 which purports to reduce the radiation emitted from the Mac video display terminal (VDT). The only radiation that will be significantly reduced is the visible spectrum, and those wavelengths can be attenuated by a ninety-five cent plastic report cover. Federal laws already regulate the amount of beta (low-damage) radiation that a VDT can produce, and the glass front re-

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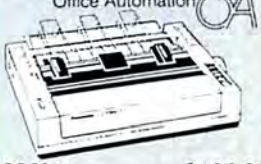
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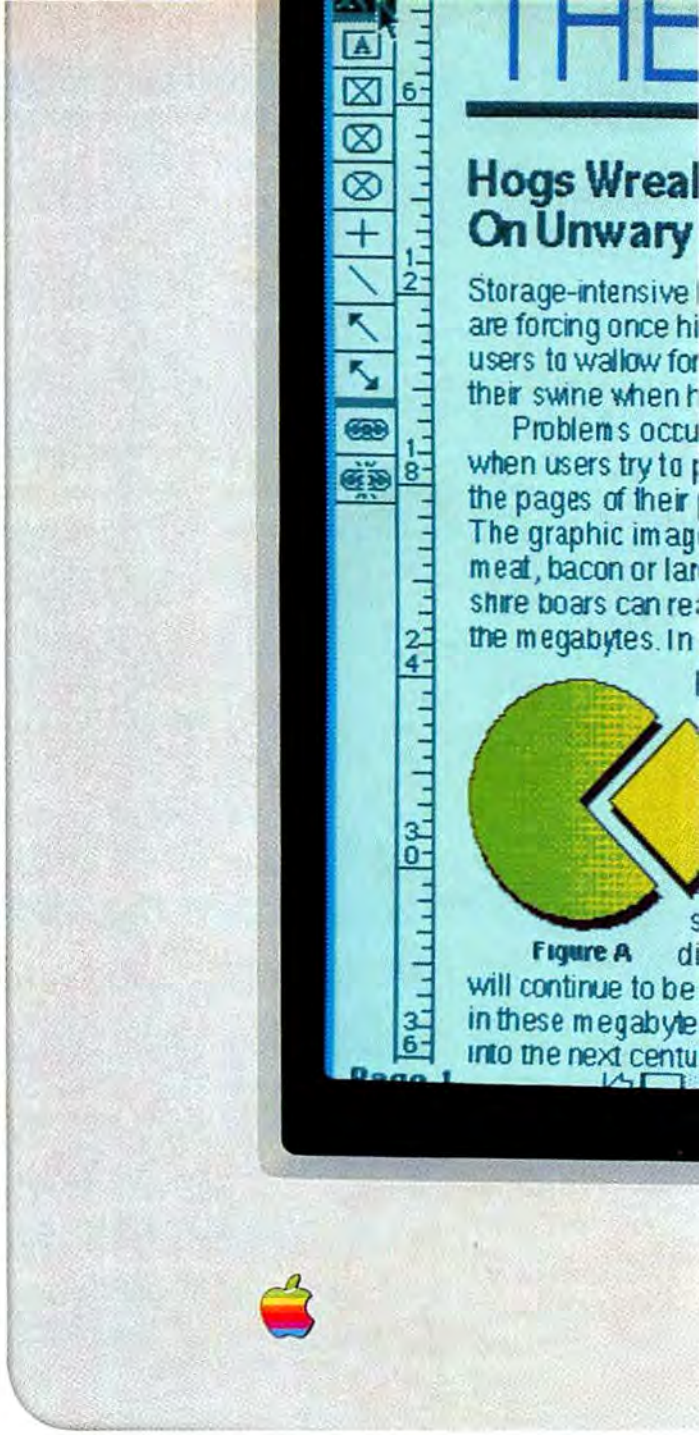
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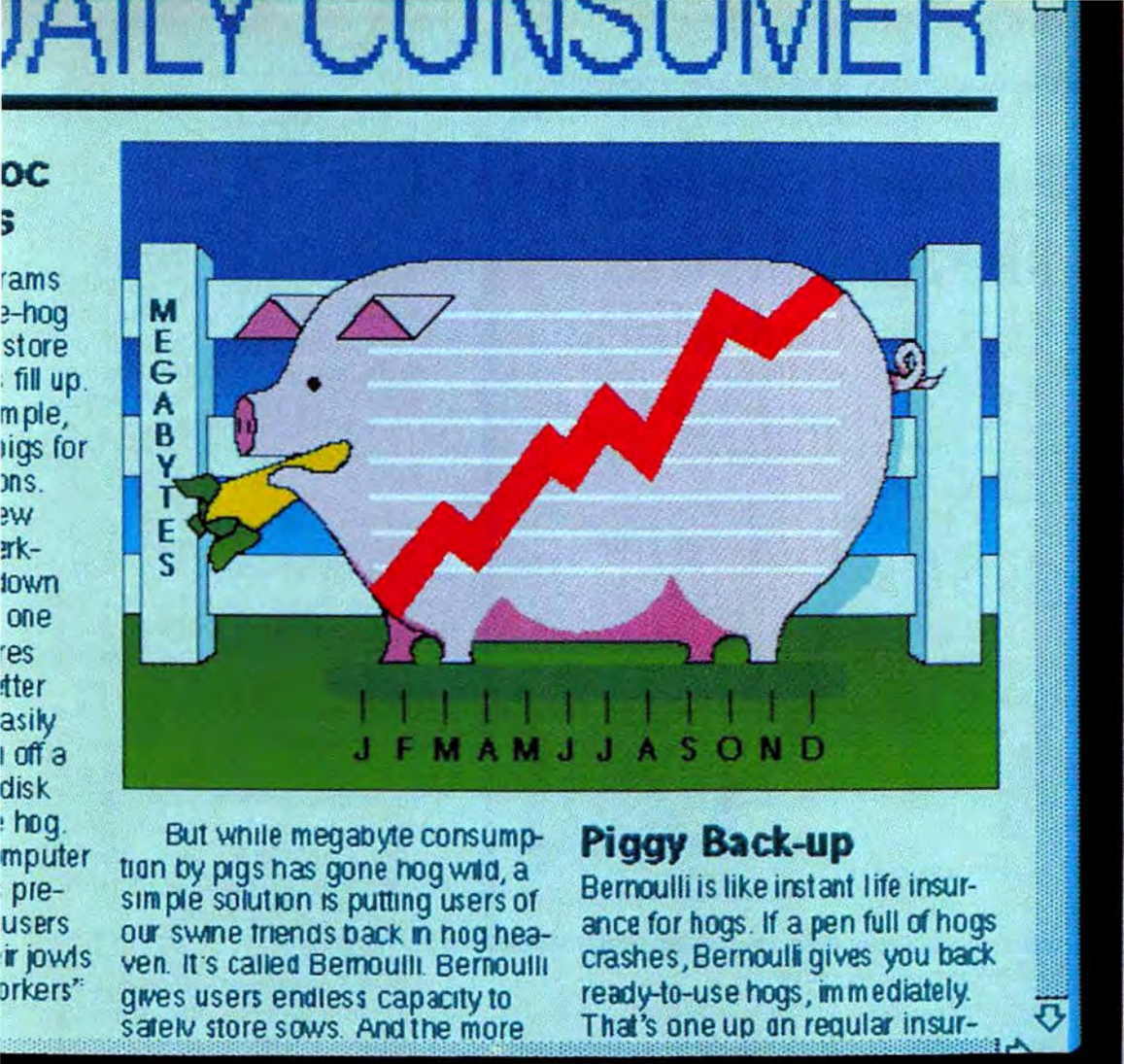
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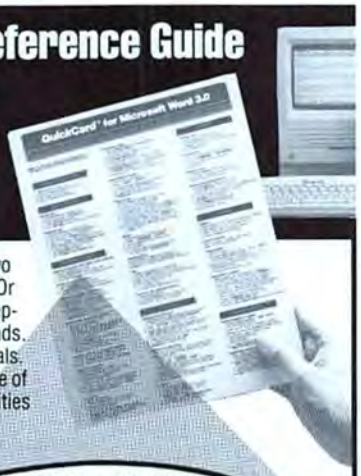
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Letters

duces the amount to virtually nil. A far better way to cut your daily radiation dose would be to stop eating bananas (rich in a radioactive isotope of potassium). In fact, on a mass-for-mass basis, Jane Fonda gives off more radiation than a Macintosh does.

WILLIAM L. MCDOWELL
AIKEN, SC

A recent study concluded that pregnant women who work with VDTs more than 20 hours a week are twice as likely to miscarry as other pregnant women. However, that study did not establish a cause-and-effect relationship; factors other than radiation (such as job-related stress or the ergonomics of the arrangement of the VDTs, chairs, and desks) could be responsible. The National Institute of Occupational Safety and Health maintains that VDTs do not emit dangerous levels of radiation. — JZ

SYNERGY CRISIS

I detected a synergistic thread in regard to proper credit coursing through your June '88 issue, starting with Danny Goodman's and Jim Hamilton's letters and ending with Neil Shapiro's column. I didn't expect to get intellectually raped in that same issue, but I was by the time I reached page 103. There I found what looked like a promotional photograph by a monitor company with an unauthorized image of my timber frame house design. I wholeheartedly agree with Neil: The least they can do is ask.

DAVID STOVALL
EXCELSIOR, MN

NOTHING LIKE A DANE

I would like to correspond with a Mac user in Denmark so that I can learn more about Danish software (like spelling and style checkers). My address is Route 2, Box 374, Floyd, VA 24091.

KRISTINE REID
FLOYD, VA

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EDITED BY LOUISE KOHL

Once More, with Color

In the early days of the Macintosh, color was considered an effete frippery. Who needed it? We had *resolution*. With the advent of the Mac II, we all wanted it, whether we actually needed it or not. Those who do need color — engineers and desktop publishers, for example — will be happy to learn that they can now have color and two-page display from Radius.

The Radius Color Display System is a combination of a 19-inch monitor (with a 30-percent-larger workarea) and the GS/C Interface — with an 8-bit video card, cables, and Radius system software. It works with all current color Mac II applications. The video card supports gray scale as well and works with Radius's Two Page Display monitor.

List price for the Color display is $4,295; the GS/C Interface is $1,895. For more information, write or call Radius at 404 E. Plumeria Drive, San Jose, CA 95134; (408) 434-1010.

— Louise Kohl



All New and Improved

Pick any Microsoft program you like; it probably has a new version number and new features — or will have by the end of the year — including the long-awaited upgrade of Excel and a new Word (4.0). Legal battles with Apple notwithstanding, the company is coming on strong for the Macintosh.

Excel 1.5 shipped in May featuring MultiFinder support, color, more than 40 new worksheet functions, and 30 new macros. Current Excel users will be able to upgrade to the new version for $25. For the rare Mac spreadsheet user out there who doesn't already have the product, version 1.5 lists for $395.

File 2.0 shipped in August. Its new features include improved compatibility with Word's mail-merge options, color support, and a set of templates for forms, labels, and reports. It also comes with a macro package (AutoMac). Registered users of version 1.0 can upgrade for $50; however, if you bought 1.0 after May 1, 1988, your upgrade is free. Version 2.0 lists for $195.

PowerPoint 2.0 should also be on your dealer's shelves by now, giving you the option of adding color 35-mm slides to your presentations. The Mac Plus and SE, as well as the Mac II, will have access to color templates. Other new features include a spelling check, global search and replace capability, and importation of EPSF graphics, as well as MacPaint, PICT, and PICT II formats. The upgrade will run you a mere $40; suggested retail for PowerPoint 2.0 is $395.

Sometime in October, you can start looking for the latest incarnation of Word, version 4.0. A list of its new features would stagger any current Word user. Let's just say that Microsoft's plans for the program seem to include adding just about everything anyone has ever asked for and fixing anything anyone has ever complained about. And all this new power will run on any 512K Mac with two 800K floppy drives or a hard drive. Current registered users will be able to upgrade for $75; no charge if you bought (and registered) Word after May 1, 1988. Version 4.0 will list at $395.

For more information on any Microsoft product, get in touch with the company at 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717; (206) 882-8080. And don't say they never did anything for you.

— Louise Kohl

The Little Engines That Can

Symmetry, the company that developed HyperDA and PictureBase, is making things easier for other software developers as well as for users. They will be stripping the Hyper from the DA in order to license the engine to certified developers. HyperEngine will allow access to things such as Help stacks from within an application.

The PictureBase engine has been available to developers for a while now and is used by Image Club in their collection of clip art on CD-ROM. Look for a new version of PictureBase soon. For more information, write or call Symmetry Corp., 761 E. University Drive, Mesa, AZ 85203; (800) 624-2485.

— Louise Kohl

The Colors of Golf

The only golf courses I'm ever likely to break par on have just become faster and more colorful but, alas, no easier. Version 3.0 of MacGolf, the top computer golf simulation, is now available. However, you won't find it in stores. To

get it, you need to get the normal version 2.0 and then get the 3.0 upgrade directly from the publisher, PCAI.

The most noticeable feature of version 3.0 is its full (16) color operation on a Mac II with a color monitor. Less noticeable, but as important, is improved speed and compatibility with most large screen monitors.

Also included are all six MacGolf courses, the original two plus the four (including the killer PCAI International geometric course) that come with MacCourses. In addition, there are nine practice greens and a driving range, so you can get a real feel for the game.

There are lots of detail enhancements: five enlargement options, which are especially useful when putting; a slope direction indicator line on each green; overall screen redrawing speed has been improved; Command-key selection of clubs; and the ability to install the program on a hard disk. Copy protection has been retained, but once the program is installed on a hard disk, all that is required to use it is the brief insertion of the master.

I found the new version to be a major improvement in a program I already really liked. Color is nice when golfing — very nice, in fact. And PCAI's color implementation is excellent. It's so good that it produces ad hoc the one drawback to using MacGolf without color. The images on a black-and-white screen appear softer and grayer, not anywhere near as crisp as those in version 2.0. This doesn't cause any problems; it's just a matter of esthetics. I've also played version 3.0 on an SE that has Radius's 25-MHz accelerator card (with a 25-MHz 68881 coprocessor) and 4 megabytes of RAM. This game is great on that combo. Real-time golf.

Current owners of both MacGolf and MacCourses can upgrade to version 3.0 for a $5 shipping and handling fee. If you have only MacGolf, the upgrade is $39.95, including shipping. Version 2.0 is still available at $59.95 list. For more information, contact PCAI at 1305 Jefferson Highway, Champlin, MN 55316 or call them at (612) 427-4789.

— Steven Bobker

Head-Hunting Made Easy

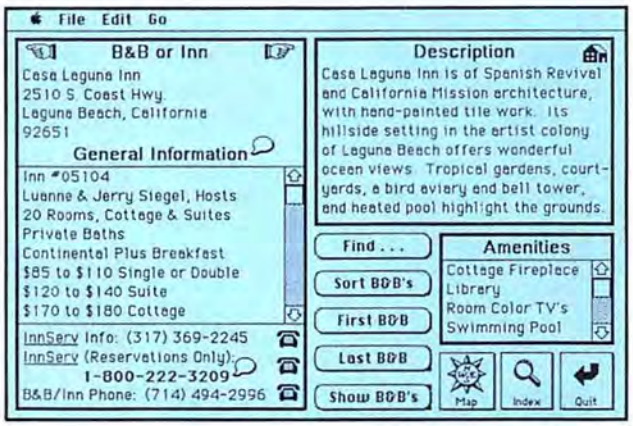
It's a management migraine: finding just the right head to go with the office decor. Staff-hungry companies turn to professional headhunters, who have throbbing temples of their own from the paperwork involved in tracking job openings, candidates, and qualifications.

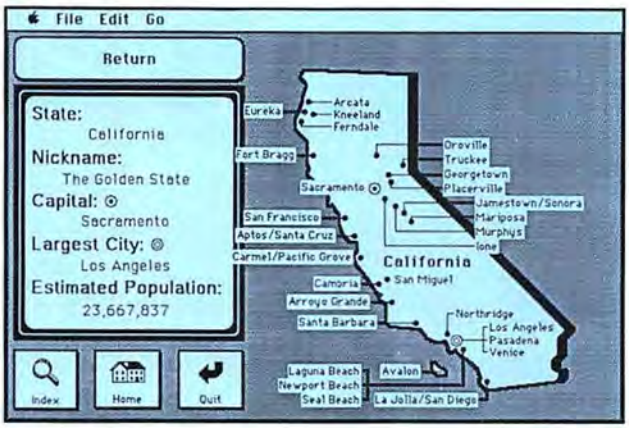
How do you spell relief? M-a-c-H-u-n-t-e-r. MacHunter RMS (Recruitment Management System) matches job seekers with prospective employers based on any number of criteria. The publishers say the Mac is the computer of choice because "executive recruitment is the most people-oriented profession and the Macintosh is the most people-oriented computer." OK, we'll buy that.

Databases containing employee resumes, company data, and job descriptions are linked using MacHunter's parent program, Omnis 3 Plus. Another database allows recruiters to track day-to-day activities such as phone calls and interviews. An index displays user-defined codes for companies, occupations, and locations.

If you need a quick way to locate a 34-year-old, hang-gliding artichoke grower proficient in LISP, the single-user version of MacHunter RMS lists for $1,295. Contact MacHunter at 228 Santa Monica Blvd., Suite 7, Santa Monica, CA 90401; (213) 393-7006.

— Aileen Abernathy





This Inn's for You

"A stately Victorian"; a horse-drawn "Surrey and Sip" tour; a "fifty-foot front gallery" with a "spectacular view of the Mississippi"; famed "Banana Buttermilk Buckwheat Pancakes." If any of these sounds good to you, if you are looking for an extraordinary place to stay, if you like quaint inns and want to get the feel of earlier times, then look at InnServ B & B HyperGuide.

The InnServ Company is a clearinghouse and reservation service for bed-and-breakfast-style lodging, including accommodations at romantic Victorian-era homes, Southern ante-bellum plantations, and small seaside resorts. A toll-free number is available for making reservations at 650 sites across the United States.

InnServ B & B HyperGuide lists accommodations, room rates, restrictions, types of meals served, extras, and detailed descriptions of the inn and its surroundings.

InnServ, available for $15.95, includes a one-year subscription to *Inn Touch*, a quarterly newsletter and a $10 value.

The B & B HyperGuide is updated daily; registered users may, for $5.00, return their original disk at any time for the most up-to-date version.

Order your copy of InnServ from InnServ, Route 1, Box 47, Redkey, IN 47373; (317) 369-2245.

— Laura Johnson



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NEWS LINE!

San Francisco Hypercard Expo

SAN FRANCISCO, CA — The first major all-HyperCard show was held June 11 and 12 in San Francisco's Civic Auditorium. Attendance on Saturday exceeded the show organizer's hopes and often resulted in packed aisles and nearly full meeting rooms. Sunday's turnout was good but not as spectacular as Saturday's. Lots of new and interesting stacks were shown, but for many attendees the big attraction was the chance to see and meet the stars of the HyperCard universe: Bill Atkinson, Dan Winkler, Danny Goodman, Dan Shafer, and others from the HyperCard development team. The show was just the place to meet and talk with these people.

The most interesting product was the *Mac ROM Encyclopedia,* published by **Brady Computer Books** and widely available at both book and computer stores. Other major news included the acquisition of the CD-ROM/HyperCard Whole Earth Catalog project by Broderbund, and **HyperPress**'s purchase of the rights to SilverScreen, a database for video collectors. In the interesting-but-not-too-useful category, **Quickview Systems** of Los Altos was showing Zoomracks and Zoomracks II, MS-DOS precursors of HyperCard.

New Programming Environment Announced at MacHack

ANN ARBOR, MI — **TML Systems** announced TML Pascal II, which will ship the first week in August. It will include a copy of the MPW Shell and will be the first third-party language to compile MacApp. It can also generate 68020 and 68881 code and is designed for creating any type of Mac program, including applications, definition procedures, DAs, Fkeys, HyperCard XCMDs and XFCNs, and MPW tool applications. List price will be $125, and registered owners of earlier versions of TML Pascal will be offered a $49.95 upgrade.

Thin Bits . . . Look for a very hot new network product resulting from an agreement between **Dayna Communications** and Novell . . . As we go to press, a new version of **Apple**'s A/UX, with much-needed Macintosh interface features, is in late beta. The long-in-development integrated package, Modern Jazz, has been canceled. **Lotus** has decided to concentrate its energies on the Mac version of 1-2-3 . . .**Jasmine** will be bundling the new and wonderful Symantec Utilities for Macintosh (SUM) with every hard disk it sells. SUM normally retails for $100 . . .Look for a very impressive art package from **Aba Software** — another transatlantic port from France, currently known as GraphistPaint. Now shipping: Mathematica, a comprehensive numeric and symbolic math package from **Wolfram Research**, Champaign, IL, designed by MacArthur prizewinner Stephen Wolfram. Mathematica will be available on many different computers, and is designed so that the analysis kernel can run on a machine from one company (say, NeXT, which will bundle the software with its computers) while using another machine as a front-end.

Do You Use Findswell, Too?

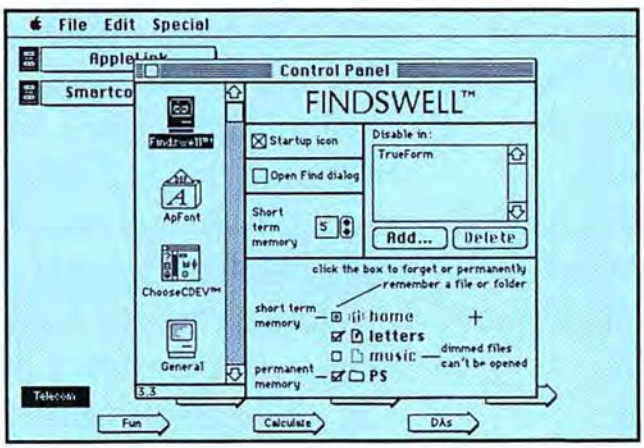
If you do, you're not alone. Lots of people use Findswell, Working Software's excellent file locater. And now there's a new and much improved version 2.0 available.

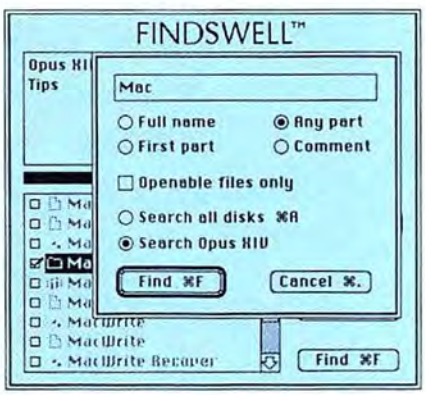
You might not have thought that there was that much room for improvement, but fortunately the publisher and author, David Dunham, did. Here's a brief list of the new features:

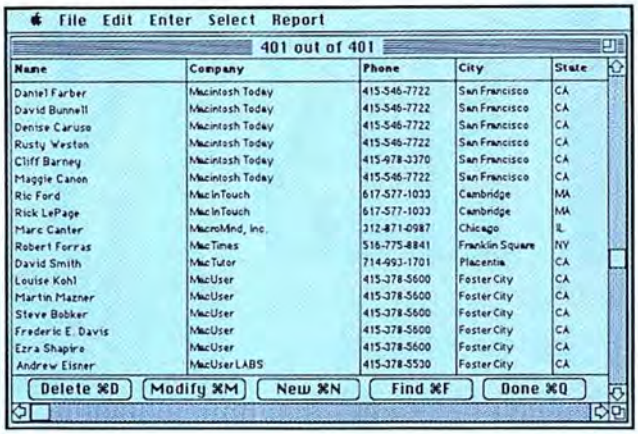
- The Findswell button that appeared in all Open dialogs in version 1.0 now also appears in Save dialogs.
- Findswell remembers all recently opened documents, regardless of whether Findswell was used to open them. The number of files remembered can be set by the user.
- You can create new folders from within Findswell.
- An option, which you should enable, causes Findswell to search all mounted volumes, not merely the disk it's on. User settings are now in the form of a cdev, so you use the Control Panel to change settings.
- Since some programs still don't tolerate utilities like this, you can disable Findswell in any programs you desire. The program comes already disabled in known problem applications.
- If you want to, you can search the Get Info comments as well as document titles.
- And you can choose to display only openable documents.

Findswell 2.0 is already shipping (since mid-June, in fact). Unfortunately, there's a price for the new features. The list price has risen $10 to $59.95. Owners of Findswell can upgrade for $14 ($10 plus $4 shipping and handling). You'll need to send in your master disk as well. If you bought Findswell after May 1, 1988, you need send only the disk and $4 to receive your upgrade. Upgrade requests should be marked as such on the envelope. To upgrade or simply to get more information, contact Working Software at 321 Alvarado, Suite H, Monterey, CA 93940 or call (408) 375-2828.

— Steven Bobker







Topping the List

The folks at Acius have released their second MiniFans 4th Dimension database, TopGuys, a contact list of the great and near-great in the Macintosh industry. TopGuys includes the press, head honchos of Macintosh hardware and software companies (including Apple), PR agencies, and "Macintosh wizards." The foundation for the database is the contact list built by Acius president (and former Apple executive) Guy Kawasaki.

Current owners of 4th Dimension or 4D Runtime can get TopGuys by writing to Acius and enclosing a $20 check. A combination package of 4D Runtime and TopGuys lists for $95. Acius's address is 20300 Stevens Creek Blvd., Suite 495, Cupertino, CA 95014. And, yes, TopGuys includes top gals too. I checked.

— Louise Kohl

Muzzle That Mac

If the thought of someone removing programs or data from your SE's hard disk or, even worse, adding something — like a virus — worries you, consider the Muzzle from Ergotron. This heavy-metal product is real hardware. It's a steel harness that slides under the computer and over the front, securely covering the 800K drive slot. The harness is held in place by a steel security panel that locks to a security pin in the rear of the SE. In addition, the Muzzle can be cable-locked to your desk or workstation.

The Muzzle is ideal for dealers or anyone who needs to put a demo on display, but who can't watch the SE all the time. Serious tampering becomes impossible. It's also intended for installation where sensitive or confidential data on the internal hard disk must be protected.

Two models are available: the basic model, which covers just the drive slot, and the power protection model, which covers the power receptacle (you need to unplug the SE) and the drive slot. Both models are available in either black or platinum and cost $69.95 each. Our photo shows a Muzzle (with power protection) on an SE that's mounted on Ergotron's MacTilt. You can use the Muzzle without the MacTilt if you desire.

For more information, contact Ergotron at 3450 Yankee Drive, Suite 100, Eagan, MN 55121 or call (612) 452-8135 or (800) 888-8458.

— John Langston



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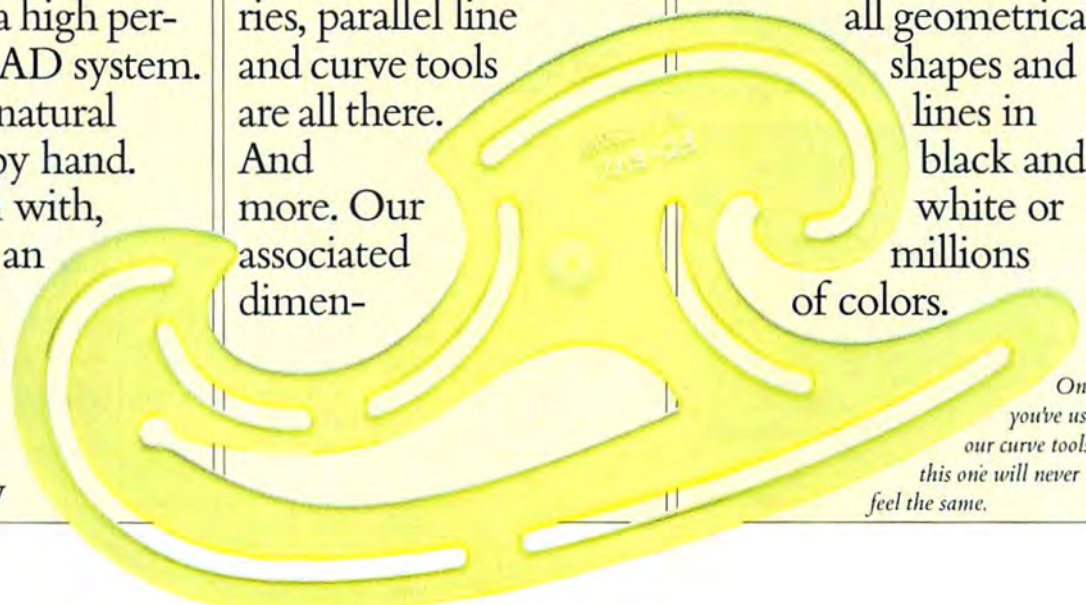
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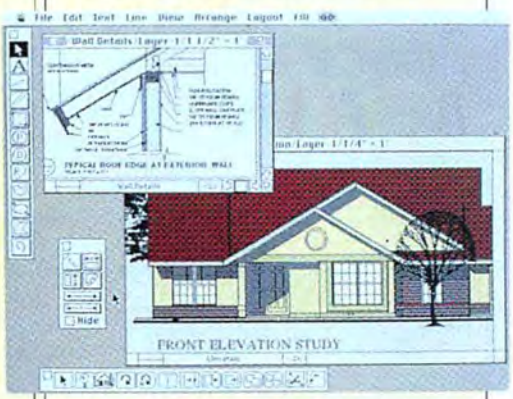


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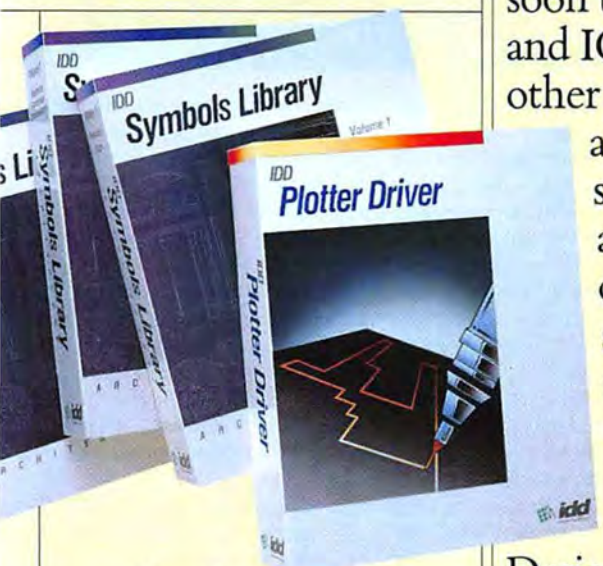


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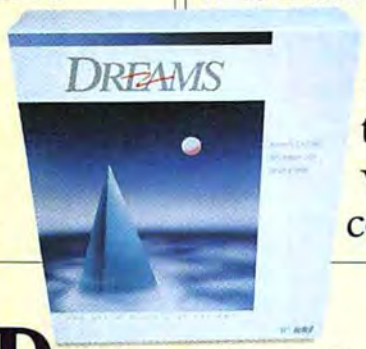


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More if by LAN

Two of the fastest-growing computer areas these days are networks and multiplatform connectivity. Adaptec's August announcement of their new SCSI interface unit addresses both of them.

Through a small external box, the Nodem, any SCSI-based computer can connect directly to an Ethernet network. The system is modular, using easily installable, snap-in Media Cards that support Ethernet, Cheapernet, and twisted-pair cabling. The Macintosh version should be available by the time you read this, and it will be fully compatible with AppleTalk. Adaptec predicts Nodem network communication 40 times faster than over LocalTalk networks.

The Nodem is a medium-cost connectivity solution, with a suggested retail price of $545 for Nodem-E (Ethernet) and $595 for either Nodem-C (Cheapernet) or Nodem-T (twisted-pair) versions.

For more information, write or call Adaptec at 691 South Milpitas Blvd., Milpitas, CA 95035; (408) 945-8600.

— Louise Kohl

The Terminator

Walking around *MacUser* offices (and probably most others) you see jumbles of cables connecting computers, printers, modems — and whatever else a modern office connects. These copper medusas are dangerous as well as unsightly, writhing their way around unsuspecting feet.

This hazard has been tamed by Monster Cable, a company well-known for its stereo cables and connectors. The means to this timely end is the MacCable Custom Termination Kit for AppleTalk and PhoneNet connectors. With this kit you can make cables of any length to fit your exact needs (no more coils of unnecessary wire), in a four-step, "five-minute process." Each kit, which retails for $125, contains a Terminal Station with a mini-DIN 3 socket, a DB-25 socket, and a nine-pin socket; an insulation-stripping tool; a wire cutter/stripper; LocalTalk mini-DIN 3 connectors; and solder.

Monster Cable also offers a complete line of MacCable cables of predetermined length, including printer, modem, SCSI, PhoneNet and AppleTalk, and specialty cables. Contact Monster Cable Products at 101 Townsend Street, San Francisco, CA 94107; (415) 777-1355. To locate your local dealer call (800) 437-2853, or in Canada, (800) 331-3755 .

— Laura Johnson

RUMOR MANAGER

With System 6.0 still unreleased at press time, we've been getting whiffs of System 7.0 (you do remember that Apple has promised or threatened two System upgrades a year). System 7.0 is the release scheduled for January 1989 (that also implies that System 29.0 will be the first System release in 2000). It looks to be physically large, so big, in fact, that it won't run on any 1-meg machines. We also hear that most of the improvements are or will be in MultiFinder, and System 6-point-whatever will remain current for 1-meg users. Of course, Apple and the memory manufacturers dearly hope that there aren't any of you by then.

Several "do what I want" or cognitive programs are well into testing. As expected, two of them are word processors, but there's also a spreadsheet, an accounting package, and an absolutely stunning cognitive graphics program out there. From what we've seen, we'd guess that one of the word processors will be the first Mac-cognitive program and that you'll be able to buy it within 6 months. Don't expect a super-duper, every-feature-but-the-kitchen-sink program like FullWrite Professional or WordStar Mac. It'll be a more basic program. The price will reflect the power and should be under $200 list.

Yet another player is about to jump headfirst into the database wars. Look for a totally built-for-the-Mac (and for speed) program that bears the name of a major MS-DOS database product. The publisher/programmers claim that they beat both FoxBASE+/Mac and 4th Dimension at each of those programs' respective strengths. And from the sneak preview, we'd say they have a real shot at it.

Vertical integration is the current Cupertino buzzword. Apple will announce that it is going into memory chip production on a very large scale. The initial announcement will have two segments: Apple will buy (actually, will have bought by announcement date) a medium-sized overseas chip fabrication plant and will also begin construction of its own large plant in Northern California. None of this will help relieve the current memory crunch. The overseas production will start arriving here late this year or early next year — just in time to go into laptop Macs — and Apple hopes that the domestic plant will start shipping in late 1989. Maybe.

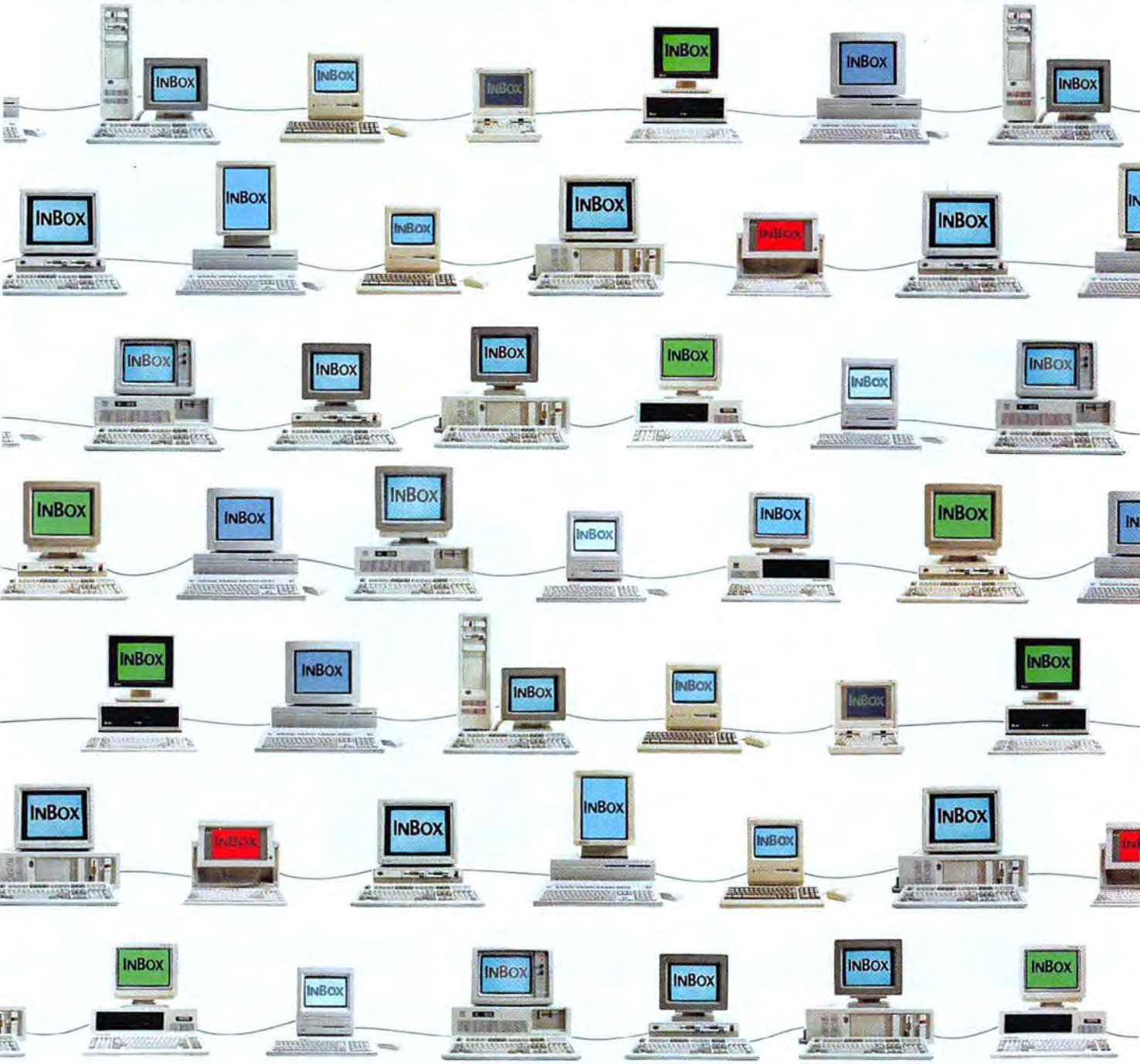
Now that WingZ is poised to become the first really serious challenger to Excel, other companies are willing to take yet another look at the Mac spreadsheet market. If WingZ can, as we believe, sow some confusion in the Excel market-share numbers, these people (both of whom started and then suspended spreadsheet projects some time ago) will jump back in and attempt to grab some of the pieces. Lotsa luck folks, even though luck may not be enough here.

The hot new Gofer utility (with its fantastic clipping and background searching abilities) isn't even released as we go to press, and we've already heard of or seen the design specs for three clones.

Look for a Mac magazine merger within the next half year. We've picked up two somewhat related stories. The first involves the merger of a successful yet struggling general Mac magazine with a business-specific Mac magazine (not the one you think; in fact, not one you've ever likely seen). The second story has the same two magazines (interesting, no?) joining a European magazine that isn't Mac-specific to put out a Mac-specific U.S. edition. The name is likely to be a Mac'ed version of the European magazine's name. In either case, the big bucks backing will be coming from Europe. (No, not England — if *MacUser* founder Felix Dennis is leaping back in, he sure hasn't told us — and he knows our phone number.)

The current memory shortages have revived interest in CCD (charge-coupled device) and bubble memories. These exotic types of memory had fallen out of favor, mainly because of price considerations. Now that RAM prices are at new and much higher levels (and likely to remain there — remember how soda prices "dropped" after the sugar shortage ended?), these alternative technologies again appear to be cost effective. And while CCDs and bubble memories can't totally substitute for the dynamic RAM that isn't there these days, it can reduce the need for a great amount of it.

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See Us At MacWorld Expo, Booth #5503 **Please circle 197 on reader service card.**

Foxy Add-Ons

When FoxBASE+/Mac was released not long ago, the Mac community became very aware of the huge MS-DOS dBASE add-on industry. After all, that's how Fox started. FoxBASE+/Mac already has its own add-on product, FoxToolBox from Buzzwords International. This program will convert single-user FoxBASE applications to multiuser applications, add code that will let programmers



and other advanced users do customized reports (a feature that directly addresses one of the main criticisms we had of FoxBASE+/Mac), analyze your FoxBASE programs (by producing tree and other flow diagrams and creating listings of data structures), and much more. It also adds mail-merge capability to FoxBASE+/Mac.

FoxToolBox is an impressive package and is now in final testing, with release scheduled by the time you read this. It will cost $295. For more information, write to Buzzwords International at Route 4, Box 112G, Jackson, MO 63755 or call (314) 334-6317.

— Jake Paden

Don't Give Me Any Static

Do you often get one of those jolts that makes your hair stand on end when you touch your computer? Are you zapped by your mouse? Struck by your printer? The static electricity that shocks your system can also wipe out a disk or cause equipment malfunctions and breakdowns, necessitating expensive repairs.

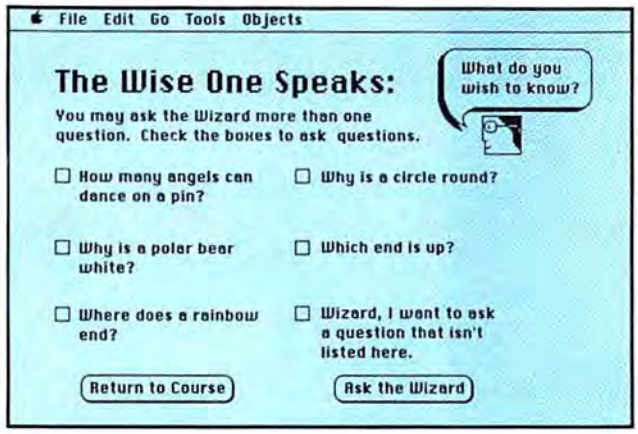
Avoid this shocking business by placing Lightning Rod Pads under all your business machines. The Lightning Rod Pad is made of fabric-covered conductive open-cell rubber. Touch the pad before touching your machine and the static electricity drains away through a grounding wire.

The Lightning Rod Pad, which also muffles noise and reduces vibration, comes in five designer colors (none of them shocking) — plum, gray, blue, green, and beige — and eight sizes. Prices range from $14.95 to $98.95. Choose an 8-inch-by-9 ½-inch pad for your mouse, an 8-inch by 28-inch for your keyboard and mouse, or a 48-inch by 32-inch for your whole Mac setup.

The Lightning Rod Pad is produced by Wave Pad. Get in touch with them at P.O. Box 24475, 1760 Yosemite Avenue, San Francisco, CA 94124-2679; (800) 345-WAVE; in California, (800) 422-WAVE or (415) 822-2550.

— Laura Johnson





Take the H Training

If you've been to a trade show recently, you've seen a HyperCard stack demonstrating something — maybe even another HyperCard stack. Well, for those of you who want to build your own demo or training stacks, First Reference has just issued their CBT Development Stacks, a two-disk package for building computer-based training programs in HyperCard.

The disks come with a variety of stacks that can be used as templates, as well as a number of other tools that can be used to create custom training stacks. Among the templates are Flashcards, an electronic equivalent of those three-by-five memory aids we all suffered through in school; Debrief, a stack for recording and summarizing responses; and Essay, which performs similar functions for essay-type responses. The tools include EZ Accessories, a collection of predefined buttons, fields, cards, and formats; Copycard/Clone, a pair of scripts that are useful for combining elements from two existing cards; and Selector, a scrolling text field with its own script that lets you select any line in the field and then act upon it.

The CBT Development Stacks list for $135 and are available from First Reference, 516 Fifth Avenue, #706, New York, NY 10036; (212) 730-8211. Just think — now you can create stacks to train people to create other stacks that train people to create stacks that create stacks! Is that recursive enough for ya?

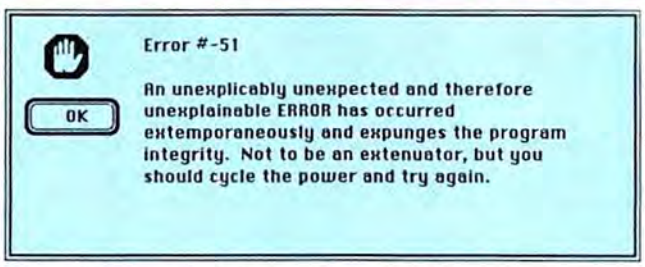
— Russell Ito

DIALOG BOX OF THE MONTH

"Take my ledgers... — please!" Who says accountants aren't funny? Jeff Huber, of Champaign, IL, found this zinger when he was working in Softsync's Accountant, Inc. It may not be as funny as Albert Brooks — heck, it may not even be as funny as Albert Einstein, but we're talking about people whose idea of great literature is a balanced checkbook.

As a reward, our accounts payable department is sending Jeff's accounts-receivable department a cash disbursement (a.k.a. a check) for $25. We'll put you on the same pay scale if you'll save a copy of your screen in MacPaint format (Command-Shift-3), so we can reproduce it. Send your submissions to Dialog Herb c/o *MacUser,* 950 Tower Lane, 18th floor, Foster City, CA 94404.

— H.D. Plant



PETER A. GOULD

UPDATES

Programs, like wine, often improve with age. To get the most out of your programs, you should be using the most recent versions. Here's a list of the current version numbers (as of press time) of many popular programs. The version number of a program can usually be found by running the program and checking the About... item at the top of the Apple menu.

Apple System software is special. Generally, and unless you have a 128K Mac, you should be running the latest System software. (128K owners should continue to use System 2.0 and Finder 4.1; 512K, 512KE, and XL owners should stick with System 3.2 and Finder 5.3.) The latest Apple System software is available free from most user groups, national on-line services, and local BBSs. The deluxe version (four disks, boxed and well-documented) can be purchased through Apple dealers for $49.95, not a bad deal considering what's included: Finder 6.0, System 4.2 or 4.3, and the long-awaited MultiFinder 1.0. As information on MultiFinder compatibility becomes available, we'll keep you informed.

All programs listed here are HFS compatible. The meanings of the codes in the right column are as follows: CP or NCP, copy protected or not; //, programs we have found to be Mac II compatible (not yet a comprehensive list); and S, shareware (try-before-you-buy software).

Changes and new listings are shown in **bold.** Compatibility is sometimes in the mind of the beholder. Programs that are listed as Macintosh II compatible may not perform 100 percent of the functions they offer on other Macs, nor do they necessarily take full advantage of the Macintosh II.

A.A.I.S. Prolog	M1.15	NCP	FONTastic Plus	1.4	NCP,//	MacNosy V2	2.8	NCP	Rags to Riches	3.0	CP,//
Acta	2.0	NCP,//	Font/DA Mover	3.8	NCP	MacPaint	2.0	NCP,//	Ragtime	2.01	NCP,//
AMS General Ledger	2.08	NCP	Fontographer	2.3	CP	MacPalette	1.0	CP	Read-It!	1.1	NCP,//
AppleShare	1.1	NCP	Forecast	2.0	NCP,//	MacPascal	2.1	CP	Ready, Set, Go!	4.0a	NCP,//
Accountant, Inc.	2.1	NCP,//	Frame Mac	1.1	NCP,//	MacProject II	1.0	NCP,//	Record Holder	2.1	NCP
Aztec C	3.4b	NCP,//	FreeTerm	2.0	NCP,//	MacProof	3.0	NCP	REdit	1.2	NCP
Backgrounder	1.2	NCP	FullPaint	1.0	NCP	MacSafe	1.08	NCP,//	Red Ryder	10.3	NCP
Back to Basics	1.03	NCP	**FullWrite Professional**	1.0	NCP,//	MacSchedule	1.0	NCP,//	Reflex Plus	1.01	NCP,//
Balance of Power	1.03	CP	Gato	1.42	CP	MacScheme+			**Reports**	1.2	NCP,//
Bulk Mailer	3.0	NCP,//	General	3.3	NCP	Toolsmith	1.51	NCP,//	ResEdit	1.1b7	NCP,//
Business Filevision	1.1	NCP	GeoQuery	1.01	NCP,//	MacServe	2.3	CP,//	Sargon III	1.0	CP
CalendarMaker	3.0	NCP,//	Glue	1.04	NCP	MacSpec	1.3	CP	Scoop	1.01	NCP,//
Capture	1.1	NCP,//	GraphicWorks	1.13	NCP	MacSpin	1.1	CP	Scrapbook	174K	NCP,//
Chart	1.02	NCP	Hard Disk 20	1.1	NCP	MacSpool	2.2	NCP	SideKick	2.0	NCP
Chooser	3.3	NCP	Hard Disk Utility	2.0	NCP	MacTerminal	2.2	NCP	Silicon Press	1.1	NCP
ClickArt Effects	1.01	NCP,//	HD Backup	1.1	NCP	MacTools (MFS/HFS)	7.1	NCP	Slide Show Magician	1.3	CP
Clipper	1.01	NCP	HD SC Setup Apple	2.0	NCP	MacWrite	5.0	NCP,//	Smartcom II	3.0A	NCP,//
CloseView	1.0	NCP	HFS Backup	1.1	NCP	Mac Zap	5.0	NCP,//	SmartScrap & The		
Cognate	1.5	NCP,//	HFS Locator Plus	2.0	NCP	MailManager	1.0	CP	Clipper	1.03	NCP,//
ColorChart	1.3	NCP	HyperCard	1.1	NCP,//	Map	1.1	NCP	Sound	3.3	NCP,//
Colorizer	1.1	NCP,//	Illustrator	1.0	CP/NCP,//	MapMaker	3.0	NCP,//	SoundCap	4.4	CP
ColorMate	2.1	NCP	ImageWriter	2.7	NCP	MDA	2.0	NCP,//	Space Edit	2.0	CP,//
ColorPrint	2.03	NCP	ImageWriter, AppleTalk	2.7	NCP	MDS	2.0	NCP	SpellNow	1.0	NCP
Comic Strip Factory	1.6	NCP,//	**InBox**	2.22	NCP	Measure Test	12.7	CP,S,//	Spellswell	2.0f	NCP,//
Comic Works	1.0	NCP,//	Insight Expert			MenuFonts 2	2.0	NCP,//	Startup Device	3.3	NCP,//
ConcertWare+	4.0	NCP,//	Accounting	2.01	NCP,//	Megamax C	3.0	NCP	StatView 512+	1.1	NCP
ConcertWare+MIDI	4.0	NCP,//	Installer	2.6	NCP	MicroPhone	1.1	NCP,//	StatWorks	1.2	NCP,//
Control Panel	3.3	NCP	inTalk	3.0	NCP,//	Micro Planner Plus	5.8b	NCP	Stella	1.3	CP,//
Copy II Mac	7.1	NCP	Jam Session	1.1	CP,//	MindWrite	1.1	NCP,//	Stepping Out	2.0	NCP,//
Copy II HD	7.1	NCP	Jazz	1A	CP	miniWriter	1.4	NCP,S	Straight Talk	2.08	NCP,//
Cricket Draw	1.1	NCP,//	JustText	1.1	NCP	MockPackage+	4.3.4	NCP,S	Studio Session	1.4	CP
Cricket Graph	1.2	NCP	Keyboard	3.3	NCP	MORE	1.1C	NCP,//	Suitcase	1.2.1	NCP,//
Curator	1.04	NCP,//	Key Layout	2.3	NCP,//	Mouse	3.3	NCP	SuperGlue	1.03	NCP,//
DA Handler	6.0	NCP	Laser Author	1.3	NCP,//	MPW	2.0b	NCP	SuperPaint	1.00	NCP,//
Deluxe Music Con-			Laser Prep	5.2	NCP	MS BASIC	3.0	NCP	Switcher	5.1	NCP
struction Set	2.0	CP	LaserShare	1.0	NCP	MS BASIC Compiler	1.0	NCP	System (MFS-128K)	2.0	NCP
Design/IDEF	1.1	NCP,//	**LaserSpeed**	1.6	NCP,//	MS Fortran	2.2	NCP	System (HFS)	6.0	NCP
DesignScope	1.14	NCP,//	LaserStatus	2.0	NCP	MS Works	1.1	NCP,//	Telescape	1.0	NCP,//
Disk Express	1.10	NCP	LaserWriter	5.2	NCP	MultiFinder	6.0	NCP,//	Telescape Pro VT 100	1.1	NCP
Disk First Aid	1.4	NCP	Laser Writer IISC	1.1	NCP	Multiplan	1.11	NCP,//	Tempo	1.2	NCP
DiskFit	1.4	NCP,//	Layout	1.3	NCP,S	MusicWorks	1.1	CP	Textures	1/01	NCP,//
DiskInfo	1.45	NCP,S	Legal Billing	1.72	NCP,//	myDiskLabeler	2.11	NCP,//	Think 'n Time	1.1	NCP,//
Disk Ranger	3.1	NCP	Legal Billing II	2.39	NCP,//	'Ncryptor	2.0	NCP,//	ThinkTank	2.0	NCP,//
Disk Tools Plus	1.01	NCP,//	**LightSpeed C**	3.0	NCP,//	Neon	2.0	NCP	Thunder!	1.0.1	NCP
DiskTop	3.0.2	NCP,//	**LightSpeed Pascal**	2.0	NCP,//	**NightWatch**	1.02	NCP,//	Thunderscan	4.0	NCP
Dollars & Sense	4.0	NCP,//	Listen 2.0	2.1	CP,//	Omnis III Plus	3.25	NCP,//	TML Pascal	2.01	NCP
Double Helix II	r40	NCP,//	Lode Runner	1.0	CP	OverVUE	2.1e	NCP,//	TMON	2.8	NCP
"Draw it again, Sam"	2.03	NCP,//	Lookup	1.0c	NCP,//	PackIt III	1.3	NCP,S	Top Desk	3.0	CP
Easy Access	1.0	NCP	Mac3D	2.1	NCP,//	PageMaker	3.0	NCP,//	TOPS	2.0	NCP,//
Easy3D	1.01	NCP	MacASM	1.2	NCP	Parameter Manager	1.092	NCP	Trapeze	2.0a	NCP,//
Edit	2.1	NCP	MacBillboard	4.01	NCP,S	Performer	2.31	CP	Turbo Download	2.1	NCP,//
Excel	1.5	NCP,//	Mac C	5.0	NCP,//	PictureBase	1.2	NCP	Turbo Maccountant	2.0	NCP,//
ExperCommon Lisp	2.2	NCP	MacCalc	1.2	NCP	Plains and Simple	4.1	NCP,//	Turbo Pascal	1.1	NCP,//
ExperLisp	1.5	NCP,//	Mac Daisy Link	1.04	NCP,//	PLP	2.0	NCP,//	Type Now	1.0	NCP,//
ExperLogo	1.1	NCP	Mac Disk Catalog II	2.1C	NCP	**PowerPoint**	2.0	NCP,//	VersaTerm	3.0	NCP
EZ Draft	2.0	NCP,//	MacDraw II	1.0	NCP,//	PowerStation	2.3	NCP,//	VersaTerm Pro	2.0	NCP
FastBack	1.02	NCP,//	MacDraft	1.2b	NCP,//	Print Monitor	1.2	NCP,//	VideoWorks II	2.0	NCP,//
File	2.0	NCP,//	MacFlow	2.03	NCP,//	Professional Composer	2.1	CP	VIP	2.5	NCP,//
Filemaker Plus	2.1	NCP,//	MacFortran (all)	2.3	NCP,//	Profit Stalker II	1.3	NCP	Widgets	3.0	NCP
Finder (MFS-128K)	4.1	NCP	MacGolf	3.0	CP,//	Programmer's Online			Word	3.02	NCP,//
Finder (HFS)	6.1	NCP	MacInTalk	1.1	NCP	Companion	2.0	NCP,//	Write	1.0	NCP,//
Findswell	2.0	NCP,//	MacLabeler	2.2	CP	Project Billing	3.0	NCP,//	**WriteNow**	1.07	NCP,//
FlashBack	1.6	NCP	MacMoney	3.01	NCP,//	QUED/M	2.04	NCP	XPress	1.1	CP/NCP
Flight Simulator	1.0	CP	MacMovies	1.02	NCP	QuickKeys	1.1	NCP,//	ZBasic	4.0	NCP
Fokker Triplane	1.0	CP				QuickWord	2.0	NCP,//			

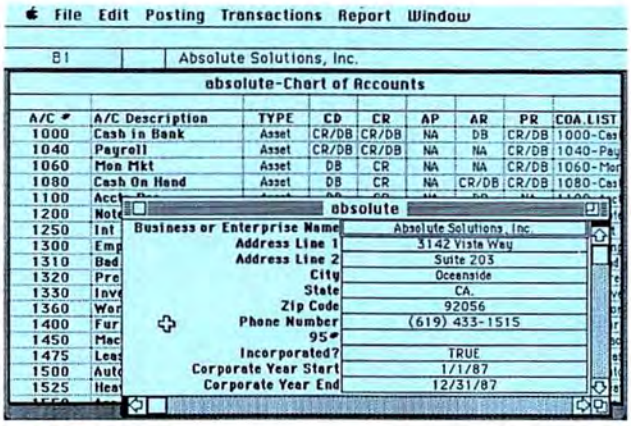
Excel-lent Account-ant

In the distant past, before computers came along and made life simple, accountants kept their clients' accounts in big ledger books. These ledgers had one huge advantage: Everyone and anyone could understand them. Then computers arrived and changed everything. Well, almost. Absolute Solutions has taken a huge step forward by taking a huge step backward. Computerized Classic Bookkeeping (CCB) is an Excel-based integrated accounting package that retains the look and method of traditional ledgers.

By using a collection of customized, linked Excel spreadsheets, CCB lets users create a chart of accounts, open a set of books, and enter and revise data just as if they were doing the same thing by hand. The package comes with predefined charts of accounts for both accrual- and cash-based accounting that an accountant can use as is, or can modify as needed. CCB also reduces the amount of typing required for repetitive tasks by taking advantage of Excel's custom dialog boxes.

CCB requires Excel 1.5 and lists for $995 (not including Excel). It's available from Absolute Solutions, 3142 Vista Way, Suite 400, Oceanside, CA 92056; (800) 633-7666, or in CA, (800) 458-3399.

— Russell Ito



Everything old is new again! Computerized Classic Bookkeeping (CCB) is an Excel-based integrated accounting package that brings the familiar look of ledger books to accounting software.

A Bose by Any Other Name

Want to have your MIDI interface and use it, too? Thanks to a special offer from Apple and Bose, you can pick one of five music software programs (ConcertWare Plus 4.0, Terpsichore, MusicMouse, MacDrums, or M Jam Factory) when you buy a Mac or the Mac MIDI interface and the Bose Pro RoomMate speakers. To receive your software, specify which software you want and send in the proofs of purchase for either the Mac or the Mac MIDI interface and for the speakers (plus warranty card) to Bose Free Software Offer, P.O. Box 8204, Beaverton, OR 97076. The deadline is October 8, 1988.

— Kristi Coale



Fade to Black

In the tradition that made "just add water" a catch phrase for Lipton Cup-of-Soup, Chronos Computers asks you to "just add ink" to their Sta-Blk Imagewriter/Prowriter ribbon cartridge.

The ribbon, which is disposable — eventually, is shipped dry. When inked, it should be able to print about 8,000 single-spaced pages. Sounds good, but a quick read through the instructions leaves you wondering whether the ribbon will actually work.

To start, you're to add exactly 35 drops of ink to the ribbon. Fine. But when they start telling you that examining the print darkness is the best way to determine when you need to add more ink, that's where I'd draw the line. They even go as far as telling you that your ribbon is haggard when a hole is worn through it.



Sta-Blk comes vacuum-packed in a ZipLock bag complete with the infamous instructions and a squeeze bottle of ink, all for $39.95 plus tax and shipping. Contact Chronos Computers at 4186 Valley Blvd., Suite H, San Diego, CA 92121; (619) 455-8200.

— *Kristi Coale*

20,000 Megs under the Sea

If the Captain had used a Mac and Navigate!, we might never have had *Gilligan's Island*. (Now, there's a thought.) Navigate! is a Digital Chart Navigation System that rolled in with the tide (Fair Tide Technologies, that is) early in May.

It won't help you find your way along the Truckee River in your inner tube, but if you have a yacht 30 feet in length or more, this system is for you.

With Navigate! you select the area to which you'll be sailing, and the computer charts the course. It will calculate distances and compass headings between waypoints (which are assigned specific latitude and longitude positions) in addition to estimating time of arrival.

An interface between the Mac and your navigational radio receiver allows the program to display your yacht's actual position graphically.

Besides the software, Navigate! also comes with a remote screen and trackball controller for less-than-dry conditions. It will run on the Mac Plus, SE, and Mac II. Navigate! sells for $1,495. Additional chart disks sell for $95. For more information, contact Fair Tide Technologies at 18 Ray Avenue, Burlington, MA 01803-4721; (617) 229-6409.

— *Kristi Coale*

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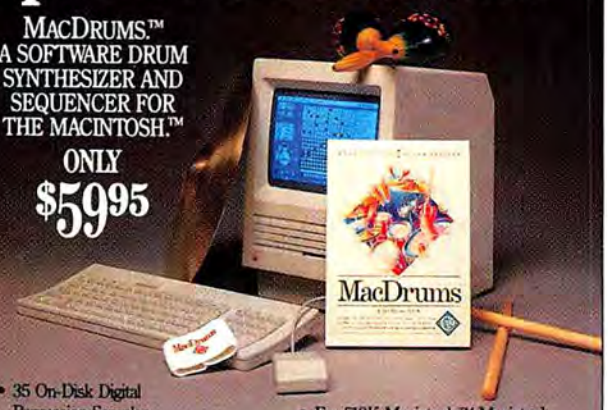
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NEW ON THE MENU

Mac's Loyal Subjects

Pointer Publications now gives Mac users a chance to look back in time. Mac Subjects, a subject and software name index of Macintosh periodicals, allows you to reference articles on programs, hardware, and other related topics from nine publications, including *MacUser*. Its premier issue, hitting the stands in May, covers topics covered from November to December 1987.

Published bimonthly, Mac Subjects sells for $5.95 an issue in the U.S, $6.95 in other countries. One year's subscription will cost you $30 here, $39 abroad. For more information, contact Pointer Publications at P.O. 70054, Marietta, GA 30007.

— *Kristi Coale*

RTF Write-Now, 2.0

Although our Founding Fathers may have frowned on interdependency, T/Maker, along with other software companies, finds it a necessity. The new version of WriteNow, 2.0, can import and export files from PageMaker 3.0 (and 2.0), Ready,Set,Go! 4.0, XPress 1.1, Text files, MacWrite, RTF files, and others.

To attract business users to WriteNow, T/Maker has included mail-merge capabilities along with MultiFinder and network compatibility. You can also have as many documents open as you desire. For those prone to making editing mistakes, there's an enhanced Undo feature that differentiates between format and content changes — nothing is irrevocable.

WriteNow 2.0 will sell for $195, and is due out around the time this issue hits the stands. Version 1.07 users can receive a free upgrade by sending in the coupon included in the specially marked 1.07 package.

— *Kristi Coale*

Word Almost-Perfect

In response to the confusion surrounding the initial release of the Macintosh version of WordPerfect, version 1.0.1 (with a Draw DA) should soon be appearing on dealers' shelves. (Look for a feature review in an upcoming issue of *MacUser*.) WordPerfect Corporation has decided that their usual DOS bug-fixing procedures have not worked as efficiently as we all might have liked in the Macintosh market.

This has been due more to an information gap than to any idiosyncrasies in their method. WordPerfect programmers are in the habit of "updating" as bugs are brought to their attention by users — which accounts for the various dates on WordPerfect 1.0 disks. What we didn't know is that any user with a bug problem is sent the most current, fixed version.

If you have a less-than-perfect version of WordPerfect, call (800) MAC-HELP. The phone number says it all.

— *Louise Kohl*



ANNOUNCING 162 NEW PRINTERS FOR THE MAC!



"The Implications of this Product are Staggering... This is a Great Product!"
Ezra Shapiro, Consulting Editor
BYTE Magazine, Feb., '88

Freedom to choose the best!

The Grappler® LQ and Grappler C/Mac/GS give you the freedom to use the printer you want with your Macintosh® Plus, SE or II. No longer are you constrained by Apple's limited printer options. Whether you need special printer features, portability or just a lower price tag, the Grapplers now leave the choice up to you. Economical lasers, wide carriage dot matrix, portable 24 pin output, 300 dpi on an H.P. DeskJet™ ($995 suggested retail) or just getting productive use out of the old parallel printer in the closet, the Grapplers do it all! With built-in support of popular Epson, Okidata, Toshiba and Hewlett Packard printers, the Grapplers will interface the large majority of the printers available today.

All this in a cable?

The Grapplers are sophisticated computing devices hidden in simple printer cables. They work like translators, changing ImageWriter® information so your printer can understand it. The Grappler C/Mac/GS makes 9 pin printers work like ImageWriter IIs. The Grappler LQ drives 24 pin and HP compatible laser printers (and the new 300 dpi DeskJet) as if they were ImageWriter LQs. All you do is set the Grappler's switch for the printer you're using, plug it in and start printing. Your Mac thinks it's still talking to an ImageWriter, so all your software will continue to operate as usual.

Getting the best from your Grappler

If your software works with an ImageWriter II or LQ, it will work with the appropriate Grappler. Dot matrix printers require nothing more than the Grappler. Laser/ink jet printers require a Mac Plus, SE or II, with the powerful Grappler Spooler software. A hard disk is recommended to hold the expanded font sets provided for best resolution output. Since the Grappler cannot recognize Postscript commands, it is not recommended for desktop publishing applications.



Over 650,000 Grapplers have connected Apples and printers for over eight years. Now, you can connect your Macintosh to your choice of 162 different printers with the same reliability and confidence.

Orange Micro Inc.
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AT PAYROLL TIME... this?

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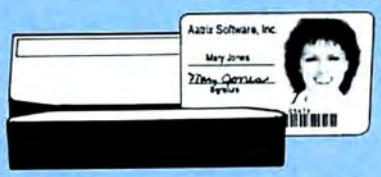
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by Neil L. Shapiro

Stating the Obvious

Remember the good old days when using a Macintosh was like using a toaster?

I recall my favorite TV commercial from those halcyon days. You saw an IBM PC and a Mac Plus sitting side by side. The announcer's voice-over explained how complicated the IBM PC was to use compared with the Macintosh.

To use the IBM PC, the announcer said, "You need all of these." That turned out to be an avalanche of manuals and papers falling from the sky and almost burying the IBM PC under a mountainous glut of obfuscating verbiage armored in three-ring binders and thick slipcases.

Then the announcer said, his voice tripping over the words like a pixieish version of Howard Cosell, that to run the Macintosh "all you need is this. . ." CLOSE ZOOM TO: An index finger poised on a mouse button.

I don't think I ever saw a TV commercial that so quickly buried the competition both literally and metaphorically. It was a great moment in television *and* computing.

Because it was simple.

Because it was to the point.

And because it was true.

THE APPLIANCE VISION

A lot of people like to fault Steve Jobs for various things. In fact, Steve-bashing has almost become the national sport of the Macintosh Nation. After all, the argument goes, if it weren't for Steve's crippling of the early, non-expandable, closed-up-tight Macs, the Macintosh Standard would have happened sooner.

Wrong.

The first 128K Macintosh, compared to one of today's Mac SEs with a built-in hard disk and an expansion slot, was undoubtedly a sorry little beggar. And, yes, people jumped all



over it, pointing out that hard disk access rates were slow using serial port drives, that there was no easy way to add a big screen monitor, and on and on.

But if the original 128K Macintosh had been designed any less like an appliance, one of two things would have happened. Either the Macintosh would have just died or it would have gone as far toward establishing a second business standard as, say, the Amiga or the Atari ST has gone today.

To put it simply: The original Macintosh appealed to the first buyers simply for one simple reason — it was simple.

Oh, sure, many of the early pioneers are now jumping up and down reading this (careful the subscription cards don't fall into your lap), screaming that it was not the simplicity that attracted them, it was the power. Yeah, right.

Until very recently, and certainly in the early days of the Macintosh's first incarnation, almost anything you could do on a Macintosh (with the exception of graphics) you could do just as well, or even better, on an IBM PC — if you wanted to invest an order of magnitude more effort. And harder, for many people, means impossible.

Steve Jobs recognized this. When he designed the Macintosh originally, he wanted to make sure that the machine was completely approachable and that it would not be easy for developers to make it difficult to use.

In the realm of spreadsheets, Multiplan (remember Excel's grandpa?) was certainly not a contender for the world's most powerful spreadsheet. It was, in fact, not a great deal more powerful than the CP/M or Apple II versions of Multiplan. There were at least three IBM PC spreadsheets that blew Multiplan out of the water as far as having the power to leap tall formulas and the ability to outrace a speeding macro.

But the early Multiplan was like the early Macintosh. It was so simple to use that anyone could use it. So everyone wanted to.

You see, that's the key to Steve Jobs's original vision of what the Macintosh computer should have become. It should have become the world's first appliance computer — a tool for Everyman (and Everywoman), a user-transparent extension of the imagination.

The original Multiplan made the concept of what-if planning available to thousands of people who would never before have even thought seriously about owning a computer. The Macintosh Interface was, for the majority of people (different from and much larger than, say, the majority of power users), the only game in town.

And Steve Jobs intuitively realized that to make the Macintosh Interface work, you could not allow there to be too many ways to complicate things.

JENNY ADAMS

Take The Long View



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So the first Macs did not allow for over-complication. They were for "The Rest Of Us," a subset of humanity one does not hear about from Cupertino as often as in the past.

> John Sculley and Jean-Louis Gassée moved in to open up the Mac. And Steve Jobs was moved out.

NEXT

But although Jobs's basic vision was sound, there came a time when all the people introduced to the simplicity of the Macintosh also wanted more power. And, to achieve such power, that meant the Mac would have to be redesigned.

John Sculley and Jean-Louis Gassée moved in to open up the Mac. And Steve Jobs was moved out.

The new design goals of the Macintosh Team under Sculley and Gassée could be boiled down, in my opinion, to one dictum: "Keep It Mac But Get IBM."

In many ways the new team succeeded admirably. Seated here in front of my MultiFindered, 5-megabyte Macintosh II, word processing on one of my two monitors while the other monitor keeps Focal Point at my beck and call, there's no doubt that the Macintosh line of personal computers is now the most powerful in the world. The only thing that comes close is OS/2 and that's only if you want to credit future maybes against present here-nows.

But just as Steve Jobs proved to be blind to the needs of his audience becoming more and more complicated, I fear that today's management at Apple has become too interested in power and performance at the sake of keeping things simple — *Mac-simple.*

We can't go on making the Macintosh more and more complicated to use. I think we need a new philosophy, a philosophy of . . . .

ANTIDISINTUITIVENESSARIANISM

When I start up a new Macintosh program I always do two things first. I boot the program. I use the program. Then, someday soon, I plan to read the manual.

But, lately, this has become harder and harder to do. The manuals for today's complicated Macintosh programs simply outweigh the Macintosh (even my Mac II and two monitors).

But, you know something?

It isn't really needed.

It seems to me that there are three things that go wrong here. The first thing can be if a program veers so far off the Mac Interface that it loses the Mac's ability to be intuitive. If that happens, then no amount of manual writing will help. Or the program can be saddled with a manual that seems to be designed to impress people by its sheer weight. The third thing, an overall factor, is that developers seem to feel that this complexity of documentation is now what is needed to sell a program to the "power user."

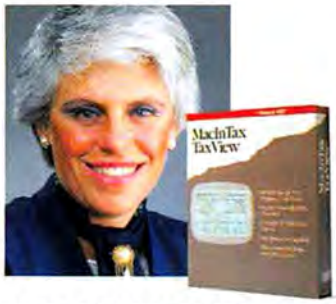
Developers do not seem to worry about "The Rest Of Us" any more than Cupertino does these days. Instead they want to reach the fellow who has on staff a computer expert and who expects to get his money's worth from paying the poor simp by dumping a ton of manuals on his head.

In the short run this is good. It makes the Macintosh look like a "real computer." I expect that, yes, in some companies the wealth of heavy manuals has helped rather than hurt the Macintosh.

But, Cupertino, please wake up here. It is as wrong to oversee the complicating of the Macintosh as it was for Steve Jobs to have insisted on the oversimplification of the Mac.

Take the lead. Tell the developers out there that they should hunt for new, intuitive ways to utilize the Mac's new power. Tell them that the way to do it is to keep it Mac, to keep it simple, to keep it for the rest of us.

Let's always make the hardware as capable and as powerful as possible.



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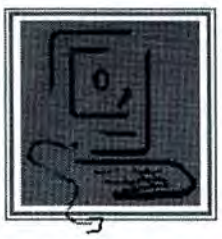
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Keep it simple.

Keep it *Macintosh.*

People are always asking me how to save a mangled hard disk.

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People are always asking me how to save a mangled hard disk. Right now, MacZap's my own first line of defense. [*Editor's Note: MacZap has been bought by Symantec and has been reissued in an even more powerful and much easier version as the Symantec Utilities for the Macintosh or SUM.*]

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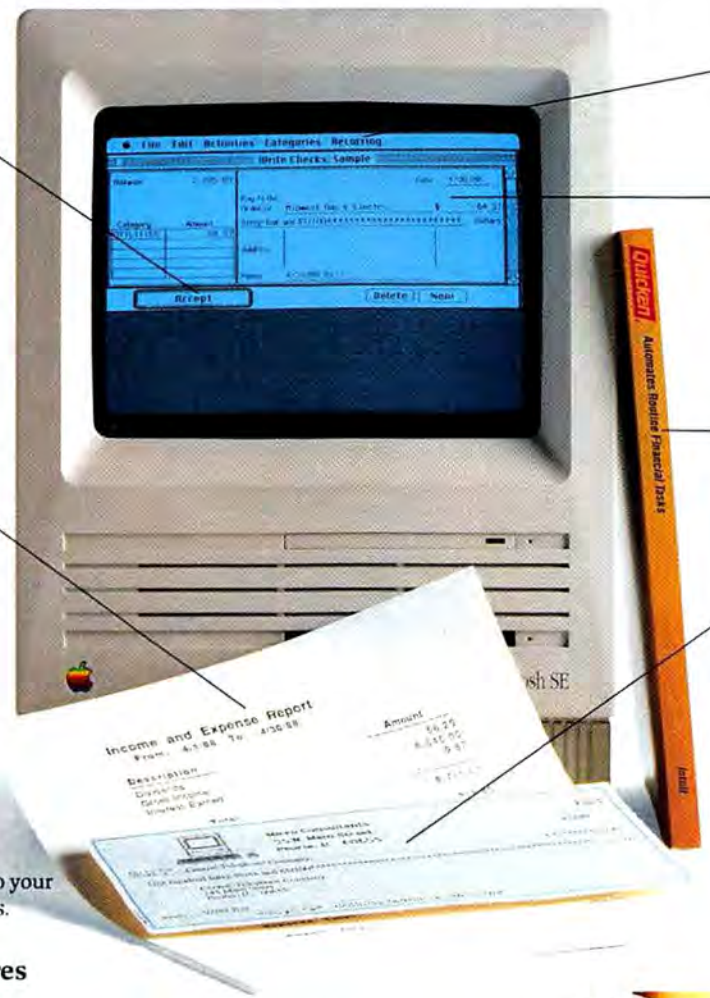
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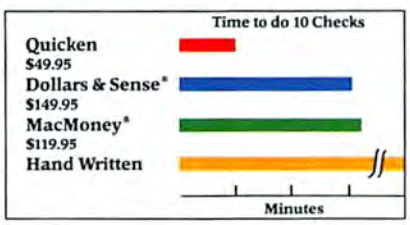
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by Steven Bobker

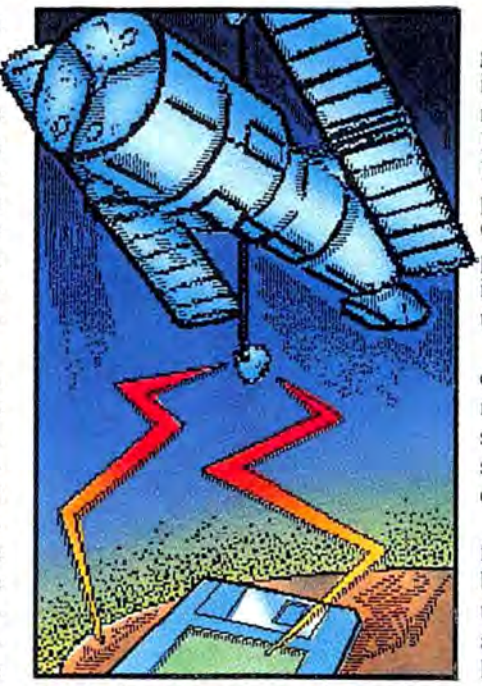
One if by LAN

Local area networks (LANs) are springing up faster than weeds in a well-watered garden. For any number of reasons, every office with more than two Macs is thinking LAN. The first is convenience, especially if you are using or planning to use a laser printer. Most laser printers require at least a minimal network connection to work; they were designed to be shared, not individual, resources.

Another good reason for creating a LAN is that both software and users are getting more sophisticated overall. Single programs can serve multiple users at reduced cost and with increased efficiency. It makes sense to share nonconfidential data among the entire staff. There has always been software that could distribute data. The problems were those of restriction and security. There is now software capable of moderating and controlling the actions of everyone on the network, allowing each user only certain privileges, including the ability to read, but *not* copy or modify, memos and other E-mail.

A network can also provide higher levels of staff interactivity. In many businesses, such interaction is desirable but nearly totally absent. Cubicle and office walls might as well be towering mountain ranges. The thin wires of LANs can easily break through these barriers.

Many LAN users will be experienced computer users, comfortable with their machines and the technology. But equally many, if not more, users are going to get their first computer experience as a result of being connected to their workgroup's LAN. For these people, the choice of which group software these people will be first introduced to is a crucial administrative decision. If the chosen software is too hard to learn, doesn't work right, or



DIDIER CREMIEUX

simply doesn't appear to do anything useful, the new users may not only not use the LAN, but they may resist all further efforts at computerization. Horror stories of exactly that happening abound in the world of minicomputer and mainframe computer trainers.

If the new users have little or no previous computer experience, most applications software will be overwhelming. The best software to start newcomers out with is a good local mail program. And while they are getting their feet wet interacting with their coworkers, they can be given off-the-LAN training in the applications software with which they will eventually spend most of their time.

Letting people get comfortable with mail first overcomes the rather natural fear many people have when they are compelled to start using networked terminals. I've seen some real diehards become eager computer users in a very short period when they were started out this way.

Unfortunately, those good mail programs have been the exclusive province of mini and mainframe users. The mail programs on the Mac, primarily InBox and Microsoft Mail (formerly InterMail) are poor relations compared to programs like Data General's CEO and DEC's DECmail. The Mac programs get the job done, but they do it awkwardly and with many ease-of-use features missing entirely.

Microsoft and Symantec (publishers of InBox) promise much-improved new versions of their products, but the skeletons don't seem anywhere near strong enough to support what is necessary.

CE Software has announced its effort, QuickMail. QuickMail is now in beta test, and it seems to have many of the smarts and features necessary to be a great mail program. Its major problem is that it is coming from a third-party vendor and will not have the total integration with the System software that the great mini and mainframe programs have. In those arenas, the mail programs are either de facto or de jure part of the operating system and are supplied by the manufacturers. Their integration is seamless.

Apple should take this bull by its horns and create a truly great mail program that's an optional part of the Mac operating system. That would mean that any two Macs could be connected by a LocalTalk cable and with no further ado could exchange mail (and files). And it would also mean that complex and powerful mail systems would become as much a part of the personal computer environment as they are in the mini and mainframe environments.

If Apple is really serious about networking its computers, it's already working on this. The success of LANs ultimately depends on Apple's mail systems.





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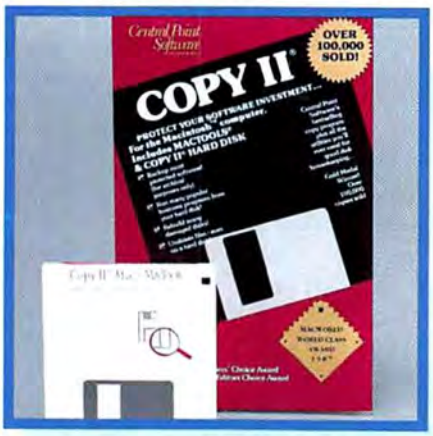
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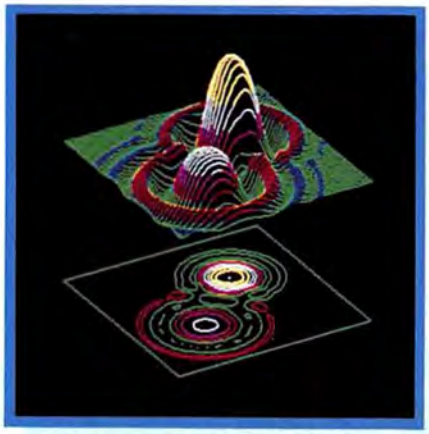


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Dennis Wilkins,
MacZone Technical Advisor

■ A customer called yesterday and complained that his Mac Plus was in need of repair. The screen was irregular, it faded in and out at times, and it made strange noises, like a "dying cat" he said. He had talked to his dealer and they were quoting him at $350 or more to fix it. "Can you help me?" he asked. I inquired further concerning his problem. It turned out that my customer works in an air conditioned office at home. And for the four days he was having his computer problems he was wearing a new polyester leisure suit. It was then apparent that the cause of his problem was not a defective power supply, but rather dry air and polyester induced static electricity. Warning! From the Technical Generals office: Those of you who work under similar conditions, exposed to dry air, and wearing static generating clothing, please insure that you protect your computer. Static is dangerous to your Mac's health.

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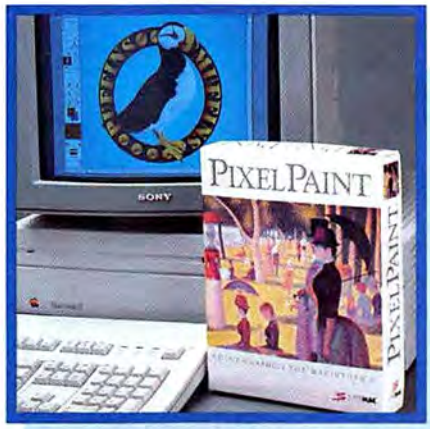


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- Trailblazer 18000 Bps Modem ..... 1228.

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Mathematics, Pre-Calculus,
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SEA CHANGES

Since the day I got my first Mac in March 1984, my word processor of choice was MacWrite. Of course, in March 1984 there was no choice: it was MacWrite or nothing. As new programs came out, I tried each and every one that could manipulate words: ThinkTank, Jazz, Word 1.05, Word Handler, MindWrite 1.1, HabaWord (beta only), Laser Author, WriteNow, Word 3.0, Word 3.01, MORE, Works, anything, everything. Words pay the rent for me (and buy the toys as well), so the tool that I use to write is my most important tool.

And until recently it was MacWrite 4.5. I modified the program to add Command-key equivalents for just about everything (the modifications were made using the Menu Key DA from Cortland Computers' excellent Top Desk set). MacWrite did just about everything I needed. Most of my work consists of creating, reading, and editing manuscripts, letters, and memos. All of these are rigidly formatted but very simple documents. MacWrite could handle them, and it was reliable. It also had the virtue of printing the last page first when printing to an old LaserWriter Plus. That way, you just pick up your documents, and the page order is correct. The new LaserWriter II series changes the print order, so MacWrite is again wrong.

MacWrite has its drawbacks, too. It doesn't handle text-only files very well, taking forever and a little bit to open long text-only files. And global font and style changes are, well, tedious. Plus, there's the absurd limit of only one open document at a time. Still, it was my word processor.

The others all had some major drawbacks. WriteNow almost replaced MacWrite, but it couldn't (and still can't, as of press time) easily save a file in text-only format without resorting to a special DA or a separate utility program. And *MacUser* production protocols required lots of text-only versions of manuscripts.

MindWrite 1.1 is also an excellent program. It nearly became my program of choice. However, its speed was not much better than MacWrite's — certainly not enough to warrant the change — and its installed base was too small. With most of the documents being received already in MacWrite format, the extra conversion (even when automatic) tipped the scales against MindWrite. But this call was close.

So I took a real hard look at Word 3.02, spent some time learning the neat stuff that's hidden in it, and really got to like it. It didn't hurt that the MS-DOS laptop I take on trips also uses a version of Word.

The original version of Word was an awkward program with a few too many bugs and a too-distant acquaintance with the Mac interface. Word 3.0 was a bug-ridden, unreliable program. Word 3.01 was OK, but by then I didn't want to take the time to really learn it. (This was a mistake on my part.) Word is a complicated program, but not all that hard to learn. Anyway, I was sure that MacWrite would improve and, well, the devil I knew was better than the devil I didn't.

I discarded most of the other programs I tried because they were too big (Jazz), too awkward (Laser Author and Microsoft Write), not powerful enough (ThinkTank, MORE 1.1), or unreliable (Word Handler, HabaWord).

I waited for WordPerfect, whose specs and feature set really impressed me, and FullWrite Professional, which had more promise than any of the others. Now that I've seen them, I'm sorry I waited and am not so impressed. WordPerfect looks nice — and may one day live up to its potential — but its authors and publishers are going to have to get a much better idea of what the Mac interface is all about. The first release of WordPerfect is far too awkward.

FullWrite Professional is very nice, especially if you have several megabytes of RAM for it to work in. I have a very crowded System folder on my 1-megabyte SE in the office, and FullWrite refuses to open on it. In general, it runs — but barely so — on most of the 1-megabyte machines in the office. But even if it runs, it can't handle documents the size of our typical manuscripts. And I can easily create documents with it on my home Mac that I can't open in the office. No, thanks.

That leaves the latest versions of MacWrite: 4.6 and 5.0. Ever since I got the release copy of 4.6, I've had unending problems with it. It insisted it knew more about margins and where they belonged than I did. As I moved documents around, it moved the margins around. And it seemed a bit less reliable than version 4.5. Mine certainly crashed more frequently.

Version 5.0 was touted as a major revision. But all it did was add a spelling checker that I don't like (I had been using Thunder!, in its selection or batch mode, and Spellswell) and Command-key equivalents for all the commands I had already added different Command-key equivalents.

So I took a real hard look at Word 3.02, spent some time learning the neat stuff that's hidden in it, and really got to like it (even its spelling checker). It didn't hurt that the MS-DOS laptop I take on trips also uses a version of Word and that the two machines (the Mac and the laptop) can now swap fully formatted files.

CD CHANGES

CD-ROM readers were everywhere you turned at the recent Comdex show in Atlanta. Virtually every peripheral manufacturer had units to show and announcements to make. NEC, Panasonic, Toshiba, and Hitachi had major

areas of their booths devoted to CD-ROM. Panasonic even took a separate booth to announce and show its new units. Now that the giant Japanese electronic companies are in the market, CD-ROM reader prices should start to drop quickly.

At a small table, Ziff announced its Computer Library. The Library is a monthly CD-ROM disk that will contain full text articles from major PC-oriented magazines (including *MacUser*).

While few of the units announced and shown were aimed at the Mac market (which is still only one-tenth or so the size of the MS-DOS base), virtually all the companies did say they would develop Mac versions of their readers. It's not that hard a job. By this time next year, you should have your choice of reasonably priced CD-ROM readers.

One of the real stars of the show was tucked away in a back corner of the Ziff-Davis booth, in fact, right next to the *MacUser* display. At a small table, Ziff announced its Computer Library. The Library is a monthly CD-ROM disk that will contain full text articles from major PC-oriented magazines (including *MacUser*). In addition, the disks will include thousands of abstracts from more than 120 other publications that cover every important aspect of computing. Since many of the publications that are abstracted are controlled circulation journals, this might be the only way that you can access some of this information.

A subscription to the Computer Library also gets you Lotus' BlueFish Searchware. This highly regarded retrieval engine was developed by Lotus specifically for use with the Computer Library. The only problem with the whole deal is that BlueFish will work only on MS-DOS machines. A Mac version of the Computer Library is in the works, although it might not use Lotus software. The Mac version is still a way off.

The MS-DOS version costs $695 for the software and a one-year subscription (12 disks). For more information, write to Computer Library, Ziff-Davis, 1 Park Avenue, New York, NY 10016, or call (212) 503-4400.

Hitachi and Toshiba showed DAT (digital analog tape) drives. These are very much the future of backup devices and may be better than CDs for distributing massive amounts of data. The tapes, which are slightly smaller than a standard audio cassette, can store about 1 gigabyte of data. The Toshiba drive was a very raw prototype unit, and you shouldn't expect anything from them too soon. The Hitachi drive, on the other hand, looked like a finished unit, right down to its SCSI connector. It's a rather big box considering what can't be in it, but I don't think anyone is going to complain about the physical size. I know I won't.

The Hitachi representatives said they expected to market the unit with MS-DOS-compatible drivers and software later this year. A Mac version will follow, but there's no schedule yet. The only sour note was the projected price: between $5,000 and $6,000! Maybe Hitachi feels that MS-DOS users have money to throw away. Or maybe Apple has been giving Hitachi lessons on introductory product pricing. Audio DAT recorder/players can now be bought in this country for around $2,000. (The tapes, by the way, run about $14 or $15 each.) The software and firmware are at least as complicated as those required for the recorder/players that will be used with computers. If someone can explain that $3,000+ pricing differential, please explain it to me!

"Pinstripe Pick"
—Robert Wiggins, MacUser
"I switched to Redux!"
—Bob LeVitus, Macazine

REDUX
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by Dave Winzler

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three great Macintosh II screen utilities
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personalizes your screen by displaying your choice of a background picture (any PICT file) in place of the gray desktop.

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Switch-A-Roo by Bill Steinberg
quickly switches between 2 user-defined screen modes without bringing up the Control Panel "Monitors" device. Supports multiple monitors.

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Quick Clicks

Quick Clicks are short reviews of released products — not beta release, prerelease, or vaporware. If it appears here, it is available commercially.

Each product reviewed is awarded a mouse rating. The *MacUser* mouse rating system grades products according to their performance, the support offered by a company, how closely the product adheres to the Mac interface, the quality of the documentation, and the consumer value. The numbers of mice correspond to the following ratings:

🖱🖱🖱🖱🖱	Excellent
🖱🖱🖱🖱	Very Good
🖱🖱🖱	Good
🖱🖱	Fair
🖱	Poor
💣	Bad

Occasionally a product that may offer promise will receive a (💣). This means that currently the product is too unstable to work — resulting in repeated System crashes when used under normal circumstances.

Mouse ratings are meant to be a guide for consumers to help them isolate the best software and hardware in a certain category. They shouldn't be the sole factor when deciding whether a product is right for you.

G R A P H I C S

Cricket Presents



Monday the boss tells you and Jones to have your presentations ready for the Wednesday afternoon budget meeting. Tuesday at 3 you turn off your modem and wave goodnight to Jones, who is struggling with a typewriter getting his overheads ready. Wednesday morning your color slides arrive by overnight courier. Wednesday afternoon your project is approved while Jones' is rejected. Your secret? Cricket Presents and the Autographix Imaging Service.

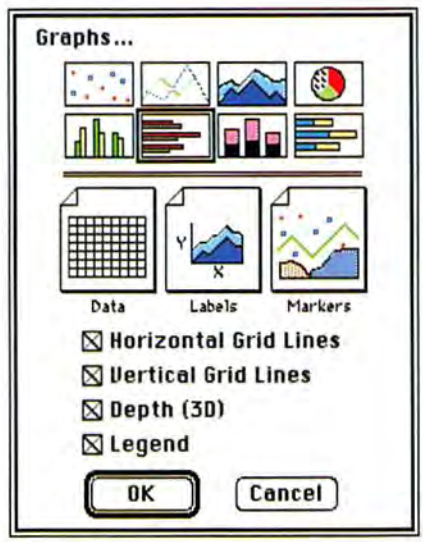
Until now, the problem with desktop presentations has been output. Handouts and notes could be printed on the LaserWriter, but if you wanted color overheads or slides you had to have expensive equipment. Cricket Presents used together with Autographix color slide service centers solves this problem. If you already have slide-making equipment (such as Presentation Technologies' ImageMaker or Matrix Instrument's SlideWriter), device drivers are available separately from Cricket.

Cricket Presents has a drawing environment similar to Cricket Draw, but with several features especially suited to presentation work. Images can be imported from PICT, PICT II, EPSF, and MacPaint files. Presents even has the ability to "colorize" a PICT, assigning different colors to patterns.

For working with text, Cricket Presents has some of the features found in word processors. Text boxes have rulers that can be used for setting margins and indentation, text alignment, and tab stops. Cricket Presents fully supports different fonts and styles, and even comes with extra-large sizes of some LaserWriter fonts that you can install in your System file to make screen displays more attractive. You can also specify the color of text.

For tabular information, Cricket Presents has a separate table tool that functions like a spreadsheet, so you don't have to fool with tabs to get tables aligned. Cricket Presents' integrated graphing capability is not as comprehensive as that of Cricket Graph, but it is useful for the simple graphs usually needed in presentations.

To help you get started, Cricket Presents comes with a tutorial HyperCard stack and two disks of templates. You can use and modify these templates or create template libraries of your own.



One of Cricket Presents' strongest capabilities is its charting and graphing functions.

Once you have created a presentation, you can print it as well as your notes, pages, and handouts on any standard output device. The Autographix alternative is a simple solution. You use the Chooser to select the Autographix driver, then print your presentation, which creates a file on disk. You then mail the disk or use the application AGXit! to send the file via modem to the nearest processing center.

Your slides or overheads will be returned to you by overnight courier. 35mm slides are $12 each, and color overheads are $9. While not cheap, it's certainly convenient and is an elegant solution if you need slides only occasionally.

Cricket Presents is an excellent presentation tool. The interface takes some getting used to, but if you are familiar with other Cricket products you will adapt quickly. Cricket Presents has one major shortcoming: its inability to import text. It comes with

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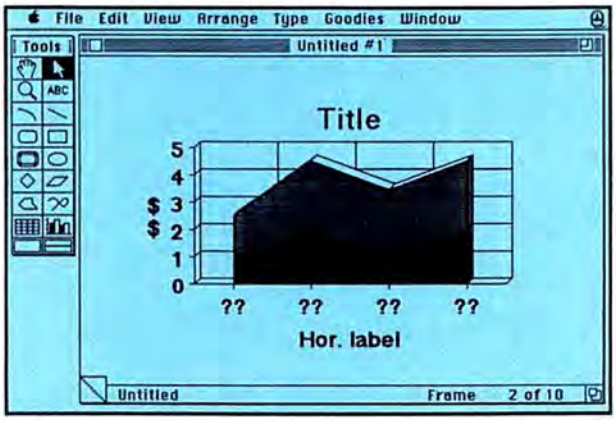
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DISKWORLD

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Quick Clicks



Cricket Presents comes with a variety of templates that can be used as masters for preparing black-and-white, eight-color, and 64-color presentations.

Acta, the excellent desk accessory outliner that can be used to lay out presentations, but the text must be copied and pasted into Cricket Presents. This is one area in which products like MORE and PowerPoint, both of which can read outlines, are more powerful.

Other than this one weakness, Cricket Presents is very powerful and easy to use.

Cricket Presents ★★★★½
List Price: $495. **Published by:** Cricket Software, 40 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355; (215) 251-9890. **Version:** 1.0. **Requires:** 1 megabyte and a hard disk. **Compatibility:** Mac II friendly. MultiFinder friendly (except for Slide Show feature). **Application Size:** 428K. **Copy Protection:** None.

— Robert R. Wiggins

Curator



As its name suggests, Curator is an art manager and cataloger. With it you can organize collections of graphic documents, browse through entire volumes, search for individual images, and display or print selections.

Curator is really two programs — one a stand-alone application and the other a desk accessory. For all practical purposes, they're identical, and which you use depends on your work habits. Curator is compatible with MultiFinder; so you can run the application concurrently with other programs.

Unlike other art-management systems, which categorize images and build their own files, Curator is a "free form" organizer that works with your images where they are. Because it's multilingual, it catalogs them in their own format — MacPaint, PICT, TIFF, and so on.

The first time you open a graphics disk or volume, Curator reads the files, creates a Thumbnail (miniature) for each image, and builds a Catalog. Curator writes archiving information to each document; so your files will grow in size slightly. A Catalog is a directory that tells Curator where each image with its keywords and Thumbnail is stored.

Catalog information is linked to its volume. On floppies, it's written to the individual disk. If there isn't room on a disk, or if it's locked, a baffled Thumbnail icon is displayed. The program still lets you view and operate on the graphics, but search capabilities are lost. On hard disks, the Catalog is placed at the root level.

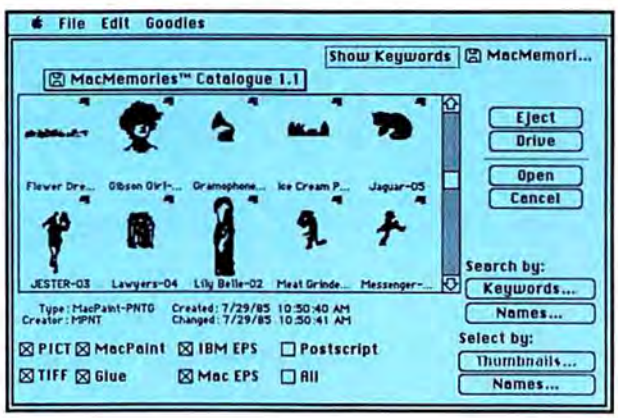
Once a Catalog has been constructed, keywords may be assigned, added, updated, or deleted from an image at any time. If you move a document from one volume to another, Curator loses track of it until you update the Catalog with a Show Keywords command for that image. Move the Catalog, and Curator creates another.

Compiling Catalogs and generating Thumbnails (especially from complex image formats) can be slow. Included with Curator is Curator's Assistant, a utility that you can bring in to pinch-hit. It scans your files, creates Thumbnails for any additions, and updates the Catalog. Although optimized for speed, the process still takes time. Assistant runs in the background with MultiFinder or can be put to work overnight.

You can select cataloged graphics by name or by Thumbnail. Each method has its own dialog tailored to the task. In either case, data about the selected graphic (date created, date modified, type, and program of origin) is displayed, and a pop-up menu shows the attached keywords.

Curator also lets you browse through images one by one or conduct searches by name or keyword. For name searches, it matches a partial or exact character string. When searching by keyword, it lists all keys stored with that volume and lets you choose one or a multiple. When looking through volumes with multiple file formats, you can narrow search criteria by eliminating some formats from the sort.

Curator can also catalog graphics in PictureBase Library format. In this case, however, the images are "extracted" from the Library files and re-



Curator visually catalogs clip art and graphics from a number of formats, then lets you search for images by name or descriptive keywords.

written. Keywords assigned in PictureBase may be added to a Curator Catalog, retained with the image (as descriptions), or simply ignored.

As well as an image cataloger, Curator is a graphics-file translator that converts files created with one program for use in another. It reads and writes MacPaint, TIFF (Tagged Image File Format), PICT, Glue (Solutions International's format), PostScript Text, and both the Mac (EPSF) and IBM (EPSP) Encapsulated PostScript formats. Its ability to work with both flavors of Encapsulated Postscript permits graphics to be transferred to and from the MS-DOS world.

Because of the different levels of information encoded in each, not every format can be converted to every other. And, of course, the process is one of translation not transformation. Changing a bit map into PICT, for example, will not endow that image with object-graphics characteristics. Still, Curator streamlines the interchange of graphics between applications. For some users, this is reason enough to buy the package.

My only complaint about Curator is that after opening a document, you must return to the program's control panel to resume searching — a small annoyance. The program works well, either as an application or as a DA. And as minor revisions have been implemented, Solutions International, a small company with an excellent product line, has (thus far) provided free updates to registered users. If you need to improve access to your graphics files or translate them to other formats, Curator is certainly worth your consideration.

Curator ★★★★½
List Price: $139.95. **Published by:** Solutions International, 29 Main Street, Montpelier, VT 05602; (802) 229-9146. **Requires:** 512K and an 800K drive. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 188K. **Copy Protection:** None.

— *Carlos Domingo Martinez*

HYPERCARD

City to City



City to City is one of the best arguments for a laptop Mac to date. For people traveling the United States, Activision's new HyperWare offering gives a pretty thorough traveler's guide to 31 major cities, ranging from Honolulu to Boston and Seattle to Miami. In addition to making a wide range of resources available, City to City features a personal-profile card and customized itinerary planning. It also integrates with Activision's international travel stack, Business Sense.

Making the best of the HyperCard interface, City to City begins with a map of the U.S. Clicking on a city brings up a card related to that metropolis. The 12 information categories include Business, Dining, LateNight, Lodging, MarketData, Media, Shopping, Sports, Theaters, Tourism, Transport, and VisitorInfo. Buttons representing each of the categories are lined up along the bottom of each city card, so you can jump quickly from one category to another. You can also pick a different city from a pop-up list box. It's possible to preselect any category and go directly from the map to a specific topic for a certain city.

Within each of the 12 categories is a wealth of information gleaned from the efforts of more than 30 researchers. The Lodging category, for instance, contains information about hotels, organized into three classes — First Class, Business Class, and Coach. The hotel's telephone number is listed (a toll-free number in many cases), and simply clicking on the Telephone button next to the number initiates a call to the selected hotel. You can also checkmark a hotel to indicate that you have a reservation and fill in the check-in and check-out dates, confirmation number (if any), and the daily rate you were quoted. With a click of the mouse, you can then transfer the necessary information to a current itinerary card. Should you discover a hidden gem of a hotel that isn't currently included in City to City, you can add it easily.

In addition to the hotel information, each Lodging card contains a button that, when clicked, displays a map of the urban area with its major roads, airports, and the location of each hotel in the list. The hotels are represented by numbered buttons on the map and are also listed, by number, along the side of the map card. Clicking a button on the map takes you back to the main card containing that hotel's information.

The other categories contain equally useful features. Restaurants are listed by the kind of food they serve and are rated both by cost and by quality. Phone numbers are also listed, and you can copy restaurant data directly to itineraries. Emergency numbers, freight companies, convention centers, and much more can be found within the City to City stacks.

I had an urge, on occasion, to see more information about specific items — restaurants or hotels, for instance, or airline schedules — but that's just the magic of HyperCard. You somehow begin to expect to see everything hyper-linked to more information. Obviously, City to City couldn't include a review of each restaurant and each ho-



The HyperCard stack City to City dispenses business travel information at the touch of a button.

Scan Anything...



Let's Not Mince Words...
Let's face it, the art of *Page Recognition* has not advanced all that much since the days of the Egyptian Pharaohs. Text and graphics never seem to come out right. M's looking like inverted W's. Multi-column documents looking like Sanskrit. It's virtually impossible to mind your P's and Q's when the level of technology has not advanced beyond *electronic alphabet soup.*

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Well Almost Anything



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*Note. Excessive Key Stroking (EKS) has been known to cause "spastic quivers" and ever so slight knee jerks in software engineers, data entry clerks and desktop publishing fanatics. Avoid whenever possible by using *OmniPage*.

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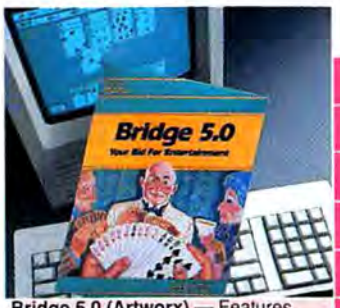
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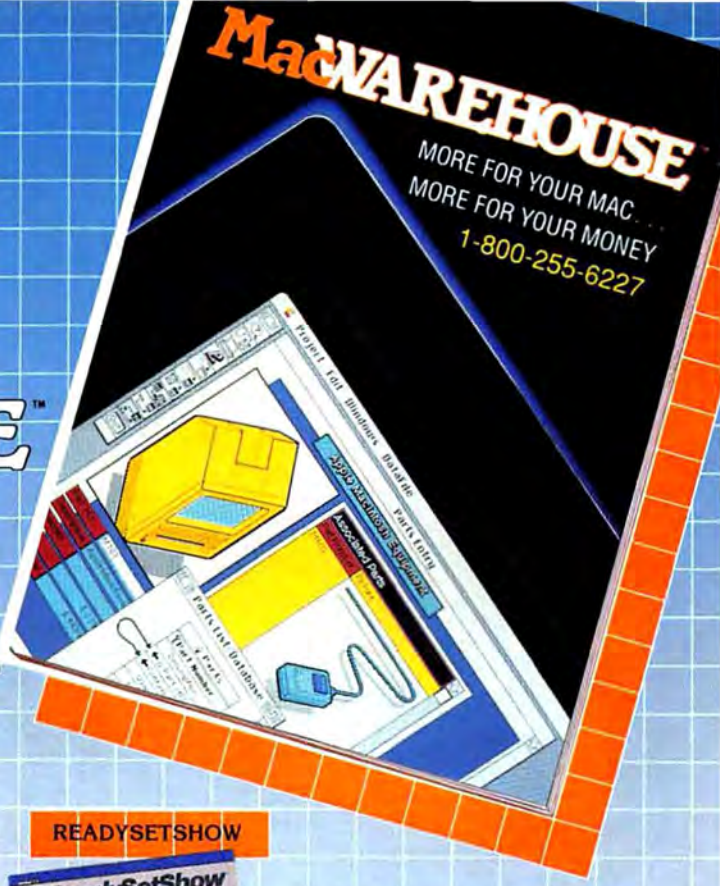
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tel. With more than 10,000 entries and 7,500 phone numbers, the product is already impressive. Speaking as an inveterate telecommunicator, I would have liked to see Telenet and Tymnet local-access numbers, at least, and even some good local BBS numbers. And the maps should display other special locations such as convention centers.

The most versatile feature of City to City is the itinerary that you can easily develop as you browse through a city's cards. The itinerary is actually a stack. You tell the program the dates for your trip, and it creates a card for each day of your journey. The daily card has information about flights, lodgings, and car rentals as well as an appointment calendar. Other buttons open additional information about airlines, rental cars, and hotels (including appropriate toll-free numbers) as well as handle HyperCard functions related to itinerary cards and stacks. Finally, you can add a special note card for any particular date.

My only complaint stems from the initial sentence of this review. City to City would be a great product to take along while traveling. Unfortunately, there is no affordable traveling Mac, so this wealth of useful material will have to stay home the next time I travel. I hope to get everything I need from it before I leave.

City to City ★★★★½
List Price: $49.95. **Published by:** Activision, 3885 Bohannon Drive, Menlo Park, CA 94025; (415) 329-0500. **Version:** 1.0. **Requires:** 1 megabyte, two disk drives, and HyperCard. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 411K. **Copy Protection:** None.

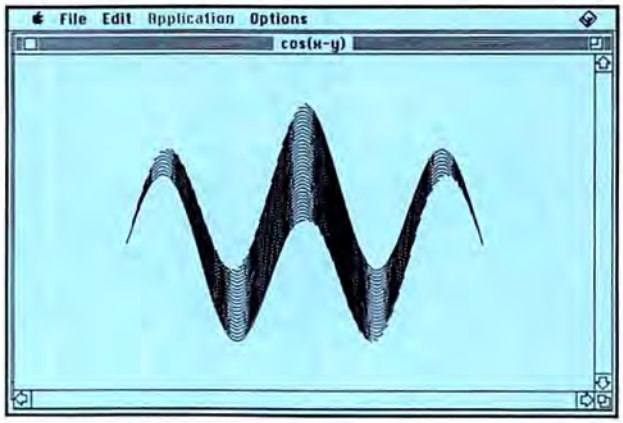
— Rusel DeMaria

NUMBER CRUNCHING

MathView Professional



When scientists, engineers, and mathematicians program on mainframe computers, they usually have access to libraries of very sophisticated numerical routines for evaluating functions and performing statistical, algebraic, and plotting work. Now some of these same tools are filtering down to personal computers. If you're looking for a stand-alone program that combines two- and three-dimensional plotting with routines for matrices, differential equations and integrals, complex numbers, and the like, or if the terms *Hermite polynomial* or *fast Fourier transform* ring a bell, you might find MathView Professional right up your alley.



MathView Professional lets you three-dimensionally plot any function with one or two variables.

The strength of MathView Professional lies in the variety and depth of its mathematical routines, not in its interface. Mainframe users may feel right at home, but seasoned Mac users will feel confined. The first step in solving any problem is choosing the appropriate menu item. For example, if you want to solve an integral, you choose Integrals from the Applications menu. You are then presented with a list of possible routines to use (Simpson's Rule, Romberg's Method, and six others). At this point, you're asked for the integrand, upper and lower limits, and derivative of the function, and the solution path is displayed. The solution requires entering information into six dialog boxes and answering a few questions in a precise order. If you make a mistake at any point and don't correct it then, you have to start all over from the beginning.

Once the solution has been calculated, it's presented on the screen. If the solution is just a number or an equation, you can use the Clipboard to copy it to a text file and look at it in any word processor. If it's a matrix or a long list of values, you can choose to save it as a plain text file or as a file that can be read by spreadsheets and databases. You are asked only once if you want to save values as an exportable file when you close the window. If you answer *no* and later decide you want a copy, you have to repeat the solution from scratch. This is user friendly?

Don't let appearances fool you, though. Behind this rough, gruff exterior lies a heart of gold. Mathematically sound and efficient routines to transform matrices, step through differential equations, compute the modified Bessel Function of the second kind, compute a polynomial least-squares approximation, and much more are waiting to be used. Every routine is referenced in the manual, and the sources are listed so you can go to the exact equations used and gain confidence in your solutions. In most cases, the references are the best available and will be familiar to mathematicians.

MathView Professional is also capable of two- and three-dimensional function plotting and of fitting a smoothed spline curve through data points. Discrete data points can't be plotted unless you want a spline curve through them — you'll need something like Excel or MacSpin for that — but functions that can be expressed as equations work fine. On 3-D plots you can choose angles for both tilt and elevation until things are just right.

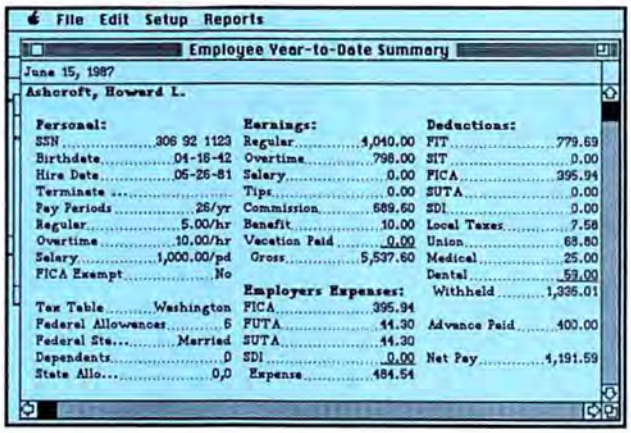
Solutions and plots appear quickly for most problems, even on a Macintosh 512KE. Of course, complicated operations will tax even the fastest Mac. The program doesn't take spe-

cial advantage of a math coprocessor (if available), because all the routines use Apple's standard numeric package. Operations will speed up by a factor of roughly 3:4 with a math coprocessor but not by the factor of 50 possible if they were fine-tuned. All numbers are stored and calculations performed in extended precision, although results can be viewed as rounded numbers if desired.

Many of the operations in MathView Professional aren't available in any other Mac program. Even if you use only one or two of them, the program will probably be worth its price. The package would be much more flexible if similar routines were available as libraries of callable functions for C, FORTRAN, BASIC, and Pascal compilers, so that you could incorporate solutions into larger programs or automate solutions under a number of conditions. But the standalone format has the advantage of requiring no prior knowledge of programming. All in all, MathView Professional represents a successful effort to bring a standard library of mathematical and engineering solutions to the Mac and belongs in the software library of any mathematically oriented Mac user.

MathView Professional ¢¢¢¢
List Price: $249.95. **Published by:** BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302; (818) 884-6911. **Version:** 1.0. **Requires:** 512KE and two disk drives (one of which must be an 800K). **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 602K. **Copy Protection:** None.

— Linda Custer



This employee payroll year-to-date summary in Simply Accounting will automatically update the General Ledger and Jobcost modules.

BUSINESS ACCOUNTING

Simply Accounting



While Simply Accounting has its roots as an IBM program, this Mac version shows none of its MS-DOS heritage. The six ledgers (receivables, payables, general, inventory, payroll, and job cost) and eight journals (which add transfers and adjustments) provide the power to handle the needs of many small businesses.

The only curb to transactions is available memory. Accounts, vendors, customers, employees, and projects are limited to 1,000 each. Maximum inventory is 2,000 items. Dollar amounts are cut off at $20,000,000. Journal entries can be split among 100 profit centers, projects, or departments. There is sample data for six companies to use as setup templates.

The well-designed sample files and tutorial will help in the initial setup of your company's books. For example, the Vendor Payments screen looks like one of your checks, complete with stub. Hit Enter, and the Vendor list pops up. Double-click on the appropriate vendor, and not only is its name entered, but all outstanding amounts are entered in the stub. Double-click on any amounts to include them in the payment. You can change any of the stub amounts if you wish to make a partial payment. To complete a transaction, click "Post," and all journals are immediately updated.

Simply Accounting adheres to the Mac interface more than most accounting programs. Data files aren't split into several unrelated documents, and they can be stored in any folder on a floppy or hard disk. Also, the Save and Save As commands are standard — a refreshing change from having to quit an application just to save data.

The manual is good. The large section on accounting principles is not only for novices. The index, however, is slightly weak. Surprisingly, the on-screen Help files are so bland that I would prefer they were eliminated.

Simply Accounting does have problems. First among them is that it's going to cost you more than you thought. The $350 price may seem like a bargain, since the software compares favorably with packages costing much more than that, but you'll be paying additional fees from time to time. For instance, all tech support phone calls, including the first one, are billed at $60/hour. You pay the toll charges, too. Next, you'll probably buy your preprinted forms and checks from them; others may work, but then again, maybe not.

Finally, if you register, they guarantee to send you their latest update if it is other than the one you have. After that, the update service is $89 a year. This is not really an option, as the payroll tax tables are built-in and cannot be modified. Any changes in the tax tables requires a new program disk. While I would hardly accuse Bedford of gouging, I do think they should include a utility on the disk to modify the tax tables yourself. Other packages do it.

Perhaps the trickiest thing to get used to with this package is closing the books periodically. Posting and closing — fundamental to every accounting routine — are dealt with uniquely in Simply Accounting. Every transaction is posted as completed, thereby keeping the books constantly updated, but that also makes error correction difficult. Closing is done automatically, whenever a particular date passes — monthly, quarterly, and yearly. Transaction journals are then summarized and the individual records erased.

There are alert boxes warning you when this is about to occur.

A wide range of reports is instantly available. They are exceptionally well presented but cannot be customized. For instance, no graphs are available. To customize, you must export the data as ASCII text and use another application.

Despite the criticism, Simply Accounting is one of the better packages I have reviewed on the Mac. Some users may have a business so modest as not to require a set of books that is so complete. Others may prefer more specialized software, such as those packages that use a professional billing module. But most small businesses owe it to themselves to give this product a hard look.

Simply Accounting ★★★★

List Price: $349. **Published by:** Bedford Software, 15311 Northeast 90th Street, Redmond, WA 98052; (206) 883-0074. Version: 1.03. **Requires:** 1 megabyte. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 536K. **Copy Protection:** None.

— Scott Beamer

Timeslips III



In today's time-driven society, it's not uncommon to see people jotting down notes constantly concerning how they spent their time. Doctors, lawyers, consultants, accountants, and engineers all bill their clients based on the amount of time they spend working for the client. But it's not just these professionals that bill by time; so do television repairmen, electricians, and plumbers. After a while, the task of keeping the records straight can become herculean.

Timeslips III was originally conceived by a salesman who needed a quick and easy way to report his expenses. After a few years, a lot of users, and a mountain of feedback, Timeslips III was created to help anyone who needs to maintain sanity in billing.

The notion of using your Mac to help you keep track of your time and expenses is a good one, but it may have one major flaw for people on the go — you can't haul your Mac with you. For those of you that travel, the discipline needed to make Timeslips III work is the same as the discipline you need to make notes in your appointment book. Timeslips III won't help you improve your resolve, but it can make keeping all of those little notes more valuable and interesting.

Timeslips III accommodates up to 250 people that have 2,000 clients. Each client can have as many as 128 projects going simultaneously. If you are considering using Timeslips III for a multiple-person office or project, then budget more than the $199.95 list price. Each person recording his time with Timeslips III on his own Mac needs his own copy.

The heart of Timeslips III is an electronic version of the quintessential time slip. The time slip is the program's fundamental unit of information. It is the place where records and billing rate files are kept. This is where you also turn on and off the stopwatch that tracks time.

The Timeslips III module that manages all of the electronic time slips is called TSTimer. TSTimer is the desk accessory used to create, modify, store, retrieve, view, or print time slips. Also included in TSTimer is a full on-line help system to give you instructions, when and if you need them.

If TSTimer is the input side of Timeslips III, then TSReport is the program's output side. TSReport is responsible for collating all of the time slips and massaging them into detailed bills or summaries that show how and where you or your colleagues spent time. TSReport has a set of sophisticated filters so you can be as low-level or high-level as you want in your bills and reports.

While Timeslips III provides a host of sophisticated functionality and power, it's a pleasure to use. All of the rigid mechanics needed to make the system work efficiently are invisible to the user. If you want to do more with the data stored by Timeslips III, it can be easily exported to any Mac spreadsheet or word processor.

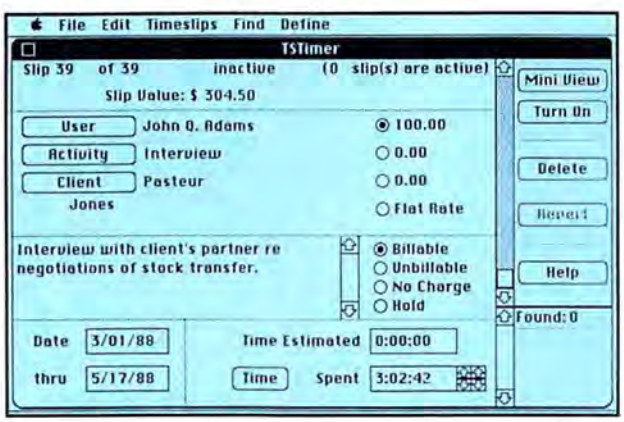
Timeslips III flexes the Mac's muscles with its use of multilayered dialog boxes and compound search criteria. On the other hand, the system makes only limited use of the Mac's graphics capabilities for creating charts from Timeslip III's database. You can use Timeslip III's built-in reports (for which there are many variations) or, if you want to format your own report, you can use the report generator. Compiled histories can be viewed on-screen or, as with any of the information in the program, easily printed out.

If you're really dedicated, you can integrate Timeslips III into your daily routine and turn the TSTimer clock on and off as you work, as well as use it to record notes about what was done. But if you're like me, you'll use Timeslips III to make your bills look good and to be a more accurate historian.

Timeslips III ★★★★½

List Price: $199.95. **Published by:** North Edge Software, 239 Western Avenue, Essex, MA 01929; (800) 338-5314; (617) 768-6100. **Version:** 1.06. **Requires:** 512K and two disk drives. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 370K. **Copy Protection:** None.

— Ken Landis



Timeslips III tracks billing and expense information for people who charge by the hour.

WORD PROCESSING

Word Finder

A thesaurus is a basic writing tool. It is not as vital as a good dictionary, but you can find many writers who will tell you that, for them, a thesaurus is as valuable as a dictionary.

The job of a thesaurus is to help writers make better use of the language. A good one suggests better words for any (or nearly any) word. It's left to the writer to actually select the best choice. Thus, a thesaurus has certain requirements: It must be as comprehensive as possible, it must have been created by people with an excellent command of the language, it requires intelligence and discrimination on the part of its users, and it assumes that its users have access to a good dictionary and are willing to use it in conjunction with a thesaurus.

Having a thesaurus available as you write is useful only if it meets the first two requirements. Word Finder, based on a popular MS-DOS program, comes very close to the first requirement, if you have the space (a hard disk is generally required) to use its large (322K) thesaurus file. The manual claims that this version contains approximately 220,000 synonyms, and I have no reason to doubt that claim. It is not as complete as the full, classic *Roget's*, but it is adequate in most cases. Serious writers will still want to keep their favorite hardcover thesaurus at hand for those cases when Word Finder fails to match your choice with its lists. When Word Finder can't find a synonym, it displays the words in its list that are nearest to the spelling of the original choice. Since you can't scroll the full word list, that feature isn't particularly useful.

The small thesaurus file (162K; approximately 120,000 synonyms) is meant for users with floppy disk systems. It is not sufficient. If you don't have room for the large thesaurus file use a hardcover thesaurus, not Word Finder.

The word lists and linkages are not based on any of the standard hardcover thesauri, so if you're used to the combinations that are typical of the standards, you may be occasionally surprised by Word Finder. This is, however, a very good thesaurus. It is far more up-to-date in its selection of words included (in comparison to *Roget's*) and doesn't often seem incomplete. And, while you can quibble with it frequently, you're not going to find many out-and-out errors. (And your trusty dictionary will prevent you from using any of them, right?)

Here's what Word Finder returns when you ask it for synonyms of the word "thesaurus" — *noun:* dictionary, glossary, lexicon, list, synonym finder, synonym listing, vocabulary, word finder. As you see, it lists its choices in alphabetical order. If there were other major headings for "thesaurus," each category would be listed alphabetically. If applicable, a list of verbs and/or adjectives follows the nouns list. Of the words suggested here, the first three seem wrong to me, but the last few are useful. That's what I meant by a thesaurus requiring intelligence. *You* must be the arbiter (*noun:* arbitrator, judge, mediator, moderator, referee, umpire), not the program.

The program is a desk accessory. It requires about 40K for installation plus space for its thesaurus file. It worked with all the major released word processors (with the exception of MacWrite version 5.0) and every other program with text-editing ability that I tried, including PageMaker 3.0 and the other page layout programs.

To look up a word, you highlight it and choose the Word Finder DA or invoke an assignable keystroke command. After you've found a suitable synonym, it can be replaced for the highlighted word retaining the original capitalization and formatting.

The interface is not as good as it could be, having one major and one minor flaw. The major flaw is that the window Word Finder displays is modal. That is, you can't do anything else while it is open, nor can you copy a group of words that it finds to the Clipboard, and you can't move the window itself.

Even MultiFinder won't switch when this window is active. This thesaurus would be a lot more useful if you could move its window and slip it under your document, so you could compare back and forth easily.

The minor flaw is visual. Some words have multiple meanings. A good thesaurus lists a master word or words for each meaning and then lists a group of subordinate words. Word Finder does this but displays all the words in bold type, smearing the distinctions. It need not be this way.

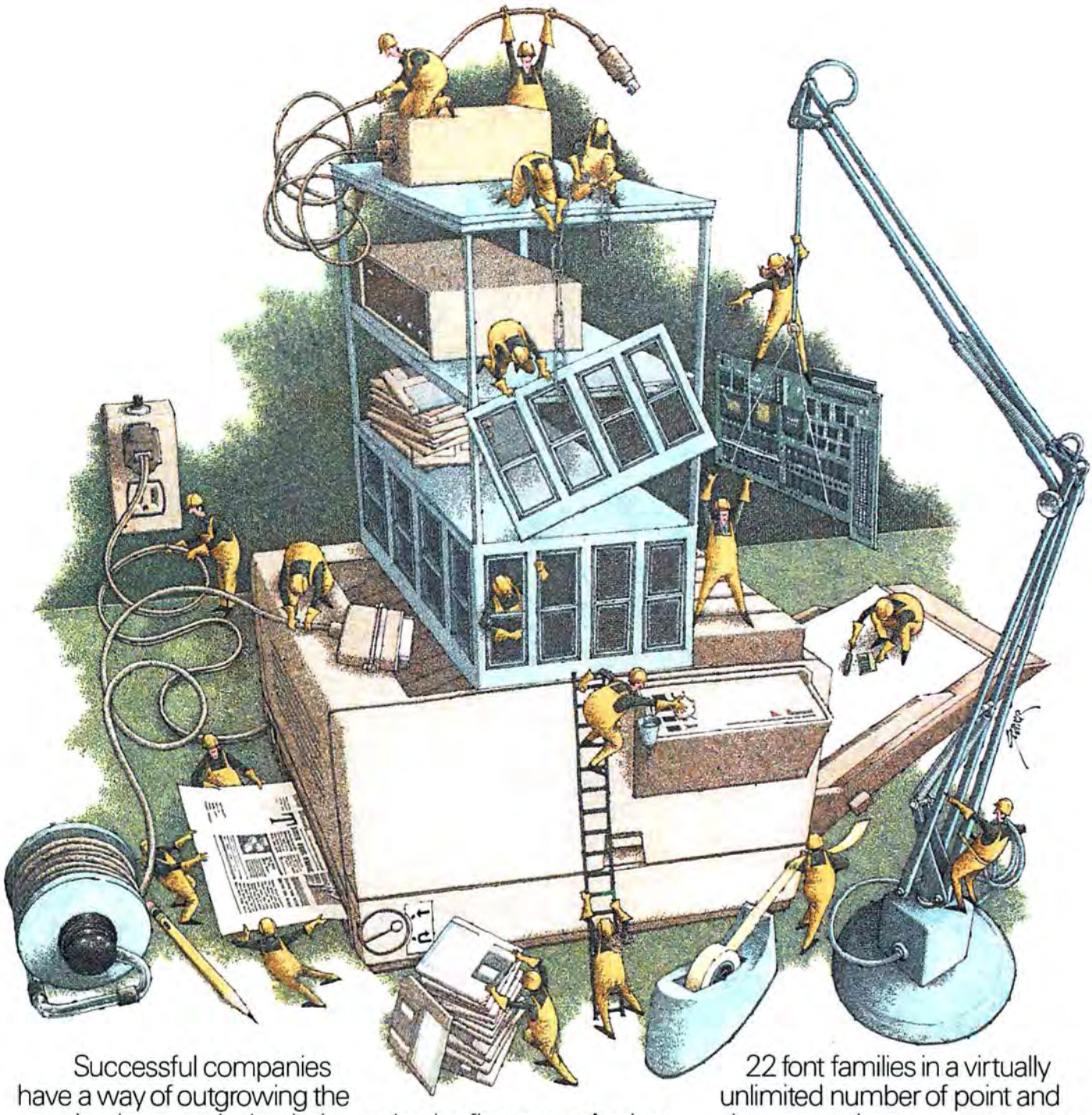
Word Finder is a handy, well-thought-out, and useful writer's tool. But it isn't complete enough to replace your trusty *Roget's*. Yet.



Word Finder, an electronic thesaurus, won't replace your trusty *Roget's*, but it does display a variety of synonyms on the fly.

Word Finder ★★★½
List Price: $59.95. **Published by:** Microlytics, 300 Main Street, Suite p718, East Rochester, NY 14445; (800) 828-6293; (716) 377-0130. **Version:** 2.0. **Requires:** 512K. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 40K for desk accessory, 360K of disk space for large thesaurus, 162K of disk space for small thesaurus. **Copy Protection:** None.

— *Steven Bobker*



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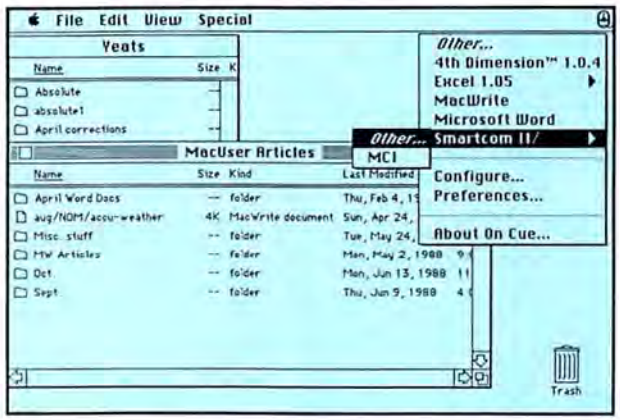
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Quick Clicks

UTILITIES

On Cue



On Cue launches a program or a specific document from the desktop or from within another application.

On Cue is one of that rare breed of utilities that instantly attach themselves to my life and don't let go — like Suitcase, DiskTop, and a few others. This application-launching menu system makes living with MultiFinder and a large screen much easier. On Cue lets you boot up or switch to another application without returning to the desktop.

I love utilities. I always think of them as extensions of the operating system; they do things that seem like part of the operating system but aren't. Some utilities come and go in my System, intriguing me temporarily but not standing the test of time. On Cue just naturally fits in, and my appreciation of it shows no sign of diminishing.

On Cue is basically an application launcher, but its design makes it especially useful in MultiFinder sessions. On Cue's Preferences dialog box lets you choose various methods of calling the program into action. My favorite is the assignable keystroke-mouse combination (I use Option-Shift-Click) that makes the On Cue menu appear at the mouse cursor. On a large screen display, this feature alone is worth the price of the program.

Other options open the menu at the upper-left corner (next to the Apple Menu) or from an icon in the upper-right corner (next to the MultiFinder icon). You can have any combination of these options active at the same time.

Configuring the program's applications is easy. Just select Configure, then use the HFS lists to select applications to add to the On Cue menu — it operates pretty much like Font/DA Mover.

You can even launch documents by adding them to a sublist associated with each application, or use the Other . . . setting to select a document at launch time.

In MultiFinder, the On Cue menu places active applications (including DA Handler) at the top of its list of applications. You no longer have to scroll through your DAs on the Apple menu to reach this list. An even easier solution to switching between active applications is a user-definable Command-key combination (reminiscent of Switcher, but better).

On Cue operates intuitively and almost flawlessly under MultiFinder. It also operates extremely fast because it is kept in RAM. There is one problem associated with this approach, however. If any System error or bomb occurs, it can wipe out the On Cue program, configuration and all. At this point, it is best to have a backup of the configured program, though future versions should handle the situation better.

Without MultiFinder active, On Cue allows you to relaunch the current active application. According to On Cue's programmer, Fred Reed, this is not an accident but allows users to select another document and reload the program. With applications that can open only a single document, it can be quicker to use On Cue to relaunch than to go through the menus.

The ability to relaunch might be disconcerting to those who encounter it by accident, and it can lead to surprises, because not all programs behave well. For instance, attempting to relaunch HyperCard causes the computer to shut down.

On Cue is very stable and seems to work with just about everything, but, as if to prove the adage that only God is perfect, there are a few small caveats. On Cue doesn't work reliably with MacWrite 5.0 (which doesn't like launch programs), and it has some limitations when used with FullWrite Professional and Stepping Out II.

Outside of MultiFinder, On Cue avoids returning to the Finder between applications and thus is a very useful timesaver. But this program really shines with MultiFinder and with large screens. For people making full use of the Mac, On Cue is more than worth the price. I know if I lost On Cue now, my system would feel awkward, crippled, and lost.

On Cue ★★★★½
List Price: $59.95. **Published by:** Icom Simulations, 648 South Wheeling Road, Wheeling, IL 60090; (312) 520-4440. **Version:** 1.0. **Requires:** 512K. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 19K. **Copy Protection:** None.

—Rusel DeMaria

NightWatch



The NightWatch just came on duty. This guard makes certain everyone signs in whenever they try to enter — no, not the building — your hard disk. Instead of signing in or out on the log sheet, you "sign-in" at your keyboard with your name and password.

Why bother? You can store about 6,666 pages of text on a 20-megabyte hard disk — just enough pages to fill a two-drawer filing cabinet. Would you leave a filing cabinet of all your memos, letters, outlines, databases, and spreadsheets available for anyone to read? Your personal electronic filing cabinet is just as vulnerable to anyone who knows enough to double-click on a document. A hardware lock on

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- **DriveWare** also allows you to define distinct storage blocks through the use of true SCSI partitioning (not your average garden-variety partitioning). True SCSI partitioning can lead to higher disk performance and in the future may make it possible for multiple operating systems to reside on the same drive (A/UX, Mac OS, etc.).
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- **DEScryptor.™** We proudly introduce our proprietary encryption utility. DEScryptor follows the federal government's super-secure Data Encryption Standard at speeds the expensive competition can't match.
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		InnerDrive 140/II	$1449

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Quick Clicks



NightWatch keeps an eye on your hard disk by requiring a key for access. The startup dialog comes from a floppy disk that boots up your hard disk when the correct password is given.

your filing cabinet provides the same security as NightWatch, a software lock for your electronic filing cabinet or hard disk. But it is not foolproof. It does not encrypt your files, partitions, or individual folders, nor does it prevent you from using the Macintosh itself. NightWatch bars unauthorized use or erasure of your hard disk. (If you want the equivalent of locking your files in a safe, you need MacSafe, from Kent Marsh Ltd.) There are three main components to the system: the Administrator application, Shutdown application, and User Disk. The Administrator sets up, manages, and troubleshoots the security system. The Shutdown application locks up and shuts down your hard disk, and the User Disk actually unlocks your hard disk. The User Disk is a normal System startup disk that the Administrator has "authorized" to become a bona fide User Disk. The User Disk also keeps a timed Activity log of who attempted to lock or unlock your hard disk. With NightWatch, you lock up a hard disk just about the way you would a filing cabinet. At night you secure your hard disk by double-clicking on the Shutdown application — like pressing the lock button on a filing cabinet. When you return in the morning, you unlock your hard disk with a "key" disk that requires you to type in your name and password. NightWatch then unlocks the hard disk, ejects the User Disk, and restarts the Macintosh. (There are other versions of NightWatch that accept identification from bar codes and retina scanners). Now your hard disk is open and operates normally. As with a normal key, you can give a spare key disk to a friend. That is, you can create User Disks that are configured for various other users besides yourself. User Disks cannot be copied like normal disks. In fact, even if you move the hard disk to another computer or boot off a floppy, the hard disk isn't recognized.

The Administrator program allows you to assign names and passwords to User Disks. In case you should lose or damage a User Disk, the Administrator program contains a master key to your NightWatch system and can override your locked up hard disk. (The Administrator program itself can also be assigned a password.)

Each major component of the system contains signatures. If any component detects that a signature has been tampered with, the program stops, reports the tampering, and logs it in the activity log file. The Administrator application may be used to report or further diagnose the tampering source. The Administrator program can recover most tampering, but should you have a Code Red Alert — the most severe kind of tampering — Kent Marsh Ltd. will assist in unlocking your hard disk.

I have been using NightWatch for a couple of months with no problems. The latest version includes a Help file; it's a nice addition, though you need it only when installing the software. I find that locking my entire hard disk is very convenient with our E-mail and AppleShare network because now I can configure my computer to automatically log on to these services and not worry about someone else turning on my computer and automatically logging onto all my accounts.

If you are worried about prying eyes or sticky fingers, use the electronic guardian angel — NightWatch. This is the only product I know of that is easy to use and gives me the peace of mind that my data is accessible only to those to whom I've given permission.

NightWatch ★★★★½
List Price: $149.95. **Published by:** Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Suite 210, Houston, TX 77056; (800) 325-3587; (713) 623-8618. **Version:** 1.01 reviewed; 1.02 is current. **Requires:** 512KE, a hard disk, and an 800K drive. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 182K. **Copy Protection:** None.

— Chip Carman

ORGANIZATIONAL TOOLS

FamilyCare

When I was a child, my ailments were met with two predictable responses: My mother's worried look and her check for symptoms in the *Better Homes and Gardens' Family Medical Guide*. Although the *Guide* is still around, Lundin Laboratories has developed a "yuppie" handbook to childhood diseases that combines the world of expert systems with the world of the Macintosh. They call the program FamilyCare.

FamilyCare represents a new movement in software. Although the application may seem slight, this is the first Mac product that combines an expert system with a knowledge base. Most expert systems on the Mac are only shells where the purchaser must endure the excruciating cycle of information-gathering, rule-generating, and other knowledge-engineering tasks. FamilyCare was compiled by the folks at Lundin Laboratories and a panel of three pediatricians from the William Beaumont Hospital in Royal Oak, Michigan, and Wayne State University in Detroit, Michigan. What they came up with is a useful, if not entirely exciting, program.

FamilyCare is loaded with information for the parents of newborn to adolescent children. Menu bar items for

Accidents, General, Skin, and Newborns subdivide the knowledge among these broad categories. Questions and answers are displayed as you progress through a session and may be logged to a dot-matrix printer.

I have inspected this program under the microscope of ResEdit and found that it contains standard IF/THEN rules embedded in resources. These rules contain information on ailments and diseases that run from acne and appendicitis to wheezing and yeast infections. Some of the more interesting topics include: burping poorly, cornmeal abrasion, drooling, dreams, gastroesophageal reflux, pyloric stenosis, and pus. A goodly mix.

To access any of the 1,500 questions and resolutions covered in FamilyCare, you pull down menus and click buttons. Nothing in this program is difficult to master. Your selection of a general category drives you down a search path that narrows as your answers eliminate possibilities. At the end of the search, FamilyCare provides you with a diagnosis and recommended actions.

The recommendations and suggested treatments are very cautious. The program often counsels that a doctor be seen after providing a temporary treatment. A number of drugstore remedies like aspirin are suggested, accompanied by more immediate issues like the time frame before a child should be taken to a hospital.

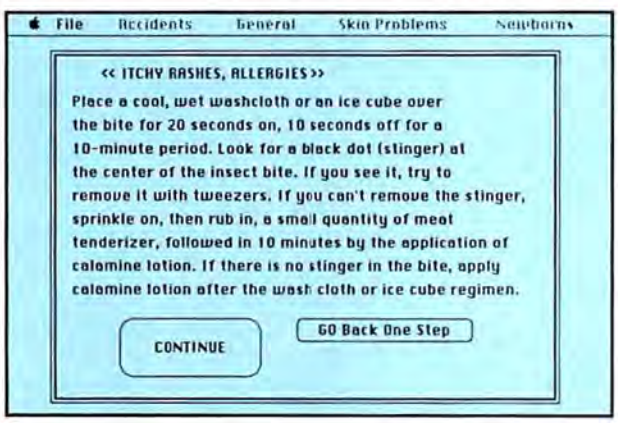
As a Macintosh program, FamilyCare leaves much to be desired. Although it is the epitome of simplicity, it's not very creative. Graphics are not used, even where they might be helpful. Forsaking graphics might have kept the memory requirements down, but it also makes the program very blah. Although it could also prove useful as an educational tool, the interface is too plain to arouse excitement in students.

FamilyCare's only bugs are found in its interaction with desk accessories. This is a program that does not like to have its space invaded. Almost every DA that I tried to use caused the program to return to its opening dialog box. This is unacceptable. On more than one occasion, calling a desk accessory caused the program to reboot my system. For those DAs that do work, the screen fails to refresh after you exit the DA. A white blob where the DA once stood informs you that a restart is needed.

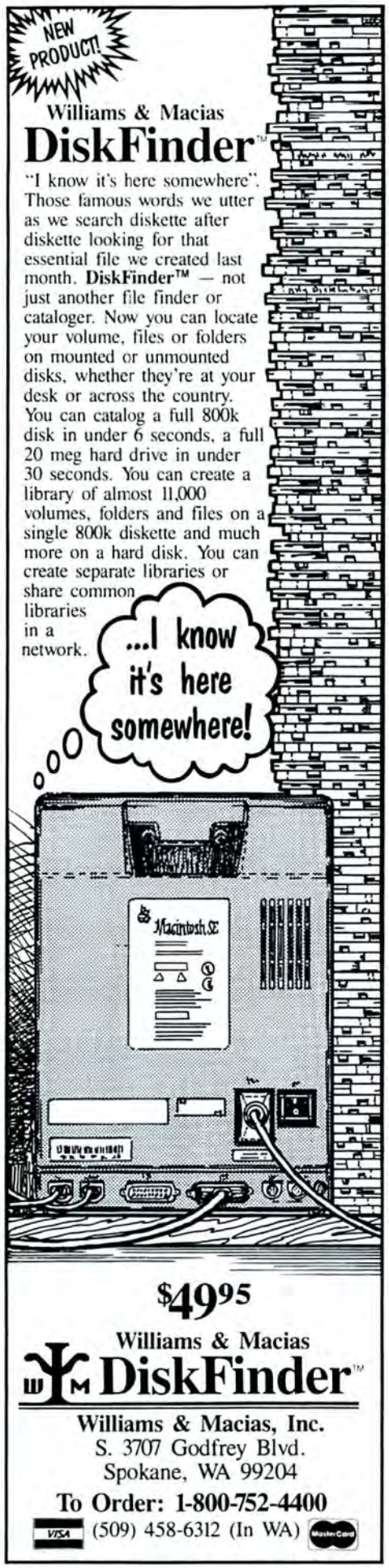
The manual is an easy read, but the screen shots do not match the actual screens seen in the program. This is a minor annoyance, but you wonder if these kinds of oversights also crept into the knowledge base.

Lundin needs to consider the implementation of graphics and should concentrate on the software quality of the whole program, not just the knowledge and inference engine. But if you ignore these problems, FamilyCare can be convenient.

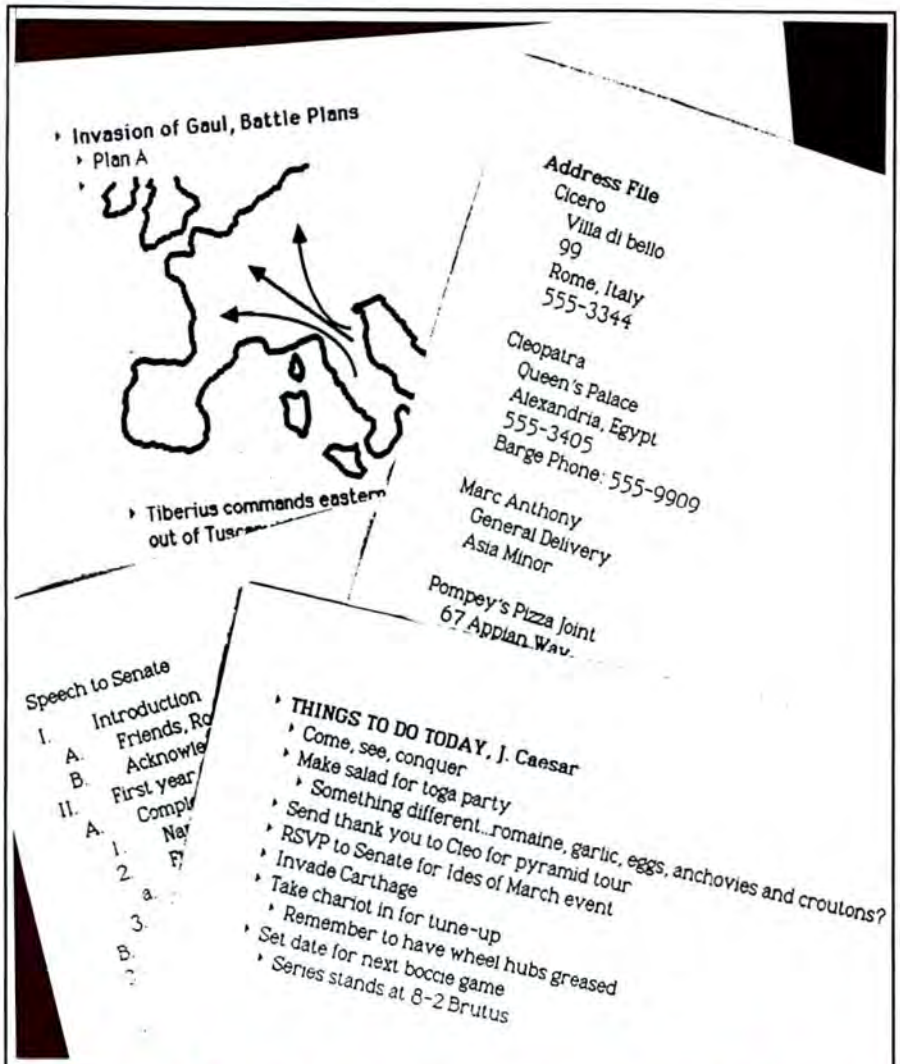
Although I don't think many parents are going to boot a Mac to find out that wounds should be washed before applying a dressing, FamilyCare is capable of identifying more mysterious symptoms. The program can identify an unknown disease and recommend temporary fixes prior to consulting a physician. At $99, I think FamilyCare



The FamilyCare expert system hands out a diagnosis and recommendation for a common childhood accident.



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Quick Clicks

is overpriced. It's one of those programs that you purchase strictly out of personal preference. If you think you want an expert system to help you deal with childhood diseases, you should buy it. If you think the software is neat but would seldom use it, buy a good first-aid book instead.

FamilyCare ½½½
List Price: $99. **Published by:** Lundin Laboratories, 29451 Greenfield Road, Suite 216, Southfield, MI 48076; (800) 426-8426; (313) 559-4561. **Version:** 1.0. **Requires:** 512K. **Compatibility:** Mac II and MultiFinder friendly. **Application Size:** 386K. **Copy Protection:** None.

— Daniel Rasmus

EDUCATION

On Becoming a Desktop Publisher



Video training tapes are full of pitfalls for the unwary: bad sound, amateurish presentation, and outright misinformation are common. When professionally presented, however, videotapes are an effective means of education.

Happily, the two-tape set On Becoming a Desktop Publisher is one of the better training tapes. Based largely on segments originally aired on the syndicated television program "The Computer Show," On Becoming a Desktop Publisher presents a wealth of information fairly, attractively, and completely.

The first tape contains a well-constructed 35-minute tutorial hosted by Rebecca Corral, a correspondent on "The Computer Show." The tutorial expects that viewers have some practical knowledge of computers and fortunately spares them the "this is a mouse" kind of basics.

The tape is divided into seven chapters, covering the differences between desktop publishing in the MS-DOS and Mac environments and moving on to the art and practice of layout, artwork, printers, fonts, hardware, and the world of service bureaus. At the

If you don't back up data, you can throw your entire office into reverse.

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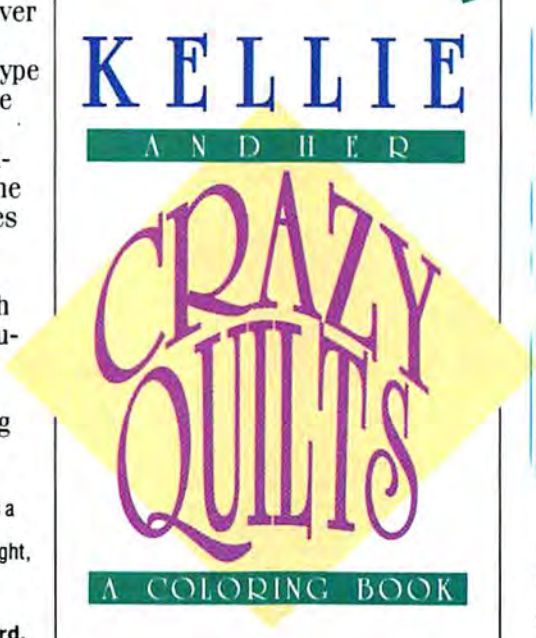
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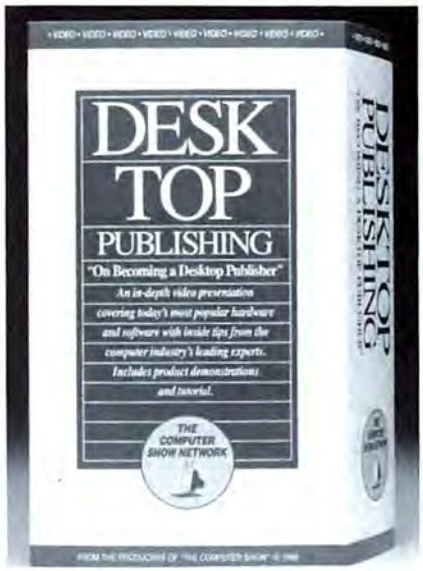
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Quick Clicks



On Becoming a Desktop Publisher, a video based on the syndicated television program, "The Computer Show," gives basic instruction on layout and design.

end of each section is an admittedly arbitrary list of sources.

Corral is a well-spoken host, and the script, written by Kevin Strehlo, is clear and concise. I have only two complaints about this tape. First, the television camera and the computer monitor are not always in sync, causing an annoying flicker. Second, Corral looks resolutely a couple of inches to the right of the camera, obviously reading from a prompter. She reads well, but the effect is like someone not quite looking you in the eye.

The second tape is a series of product demonstrations, most of them hosted by Strehlo and all apparently taken verbatim from past editions of "The Computer Show." All but one of the ten demonstrations are of page layout or graphics software, the exception being a wrap-up of Apple's new LaserWriter II family of printers.

The presidents of the respective companies perform the software demonstrations. Paul Brainerd shows Aldus' PageMaker, John Meyer presents Ventura Publisher, David Boucher puts Interleaf through its paces, and so on. The tape's producers have taken extreme care to be even-handed with the demonstrations: All are almost exactly 9 minutes long, and the finished

printout from each package is scrutinized.

Strehlo is also an effective host but is, at times, uncomfortably like Ed McMahon. Still, he manages to make his guests relaxed while keeping them firmly anchored to the subject at hand.

The package's second tape runs about an hour and a quarter — a long time to sit and watch this stuff straight through. To help the viewer find a particular demonstration on the tape, the name of the product being demonstrated is superimposed in the lower right corner of the screen, clearly visible during a high-speed scan. Also, the products are listed in order of their presentation on the videotape's box.

On Becoming a Desktop Publisher is overall an effective — though by no means perfect — presentation. It's no substitute for professional assistance when that's what you need. It gets you to the point at which you know what questions to ask. The demonstrations are by their nature uncritical, though their sum total helps you compare product strengths.

For an investment of $50 and a couple of hours' attention, On Becoming a Desktop Publisher is a fine source for a wide range of honest information.

On Becoming a Desktop Publisher ¢¢¢¢
List Price: $49.95. **Produced by:** Ocean Communications, 1641 North First Street, Suite 160, San Jose, CA 95112; (408) 437-8990. **Requires:** Beta or VHS VCR.

— Daniel J. Rosenbaum

HARDWARE

Felix



Felix is an unusual mouse alternative. While it occupies about the same amount of space as a trackball and even looks like a strange trackball or joystick variant, it is really a type of optical-tracking graphics tablet.

Felix is easy to use: Simply connect it to the mouse port, open the Control Panel, and select the Tablet Mouse setting. That's it. Then settle in to the several-hour acclimation period. If you've used a trackball or a tablet (es-



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Quick Clicks



Felix, the mouse alternative from Lightgate, uses optical technology and a small pad to give precision control over cursor movement.

pecially one with a puck), you should get the feel of Felix quickly. Even if your only previous pointing tool has been a mouse, you'll be able to use Felix relatively quickly. However, you may not like it. As with a trackball, a significant segment of users never like using devices like this one. Before you buy, try to arrange a test of this moderately expensive mouse replacement.

Felix is ergonomically ambiguous. The base unit is 6 inches square with sloped edges. Unfortunately, the slope that left-handers would rest a palm on is much smaller, steeper, and more uncomfortable than the nicely designed slope provided for right-handers. The control handle is neutral (it works well with both hands), and the buttons that toggle Felix between its Precision and Normal modes are well placed (to both sides of the control handle).

The base unit and sliding plate have a substantial and solid feel, while the control handle feels somewhat flimsy (although torture tests indicate that the problem is one of feel and not fact). Its edges are too pointy, and the button on top is both too big and too loose. It's very easy to click when you don't want to.

Felix's Precision mode gives you virtually pixel-level control at decent speed. It's great for editing bit-mapped illustrations, touching up charts, and drawing in general. Most of the time you'll be in Normal mode, where the speed and feel are very much that of a mouse. Having both modes so easily accessible and switchable encourages using whichever one is most efficient for the task at hand. While it might appear easy to accidentally toggle between modes (the buttons are close to the control handle), that won't happen often. If it does, you'll know instantly because the buttons provide both audible and tactile feedback when pressed.

I found Felix a delight to use, but then I am right-handed and have long been a trackball addict (at least on my Plus; I'm still waiting for the first really good ADB trackball). It's compact and quick — both great virtues in a pointing device.

Felix's construction makes it far more impervious to the dirt that often gums up the works in both mice and trackballs. Its dual-mode operation is very practical, because switching from one mode to the other is a simple click of a surface-mounted button. I'm eagerly looking forward to the promised ADB version.

Felix $\$\$\$\$$
List Price: $149. **Manufactured by:** Lightgate, 6202 Christie Avenue, Emeryville, CA 94608; (800) 426-5324; (415) 596-2350. **Requires:** Mac Plus. **Compatibility:** Does not work with SEs or Mac IIs. Compatible with all software. An ADB version expected by July or August 1988 for $169.

— Steven Bobker

HyperDialer



I'm one of those annoying people who likes to talk on a speaker phone. I know, I know. You don't like the "tinny" sound you get. You feel like the entire world is eavesdropping. But I make notes while I'm talking, and I don't write so well with my ear all scrunched down to my shoulder and my other arm trying to hold a piece of paper and write at the same time.

This propensity for hands-off phone use led to a certain amount of interest in HyperDialer, a little gizmo from DataDesk International that hooks your Mac up to a phone via the computer's speaker connector. My enthusiasm emerged from a trial use of HyperDialer a little worse for the wear.

Installing HyperDialer is a piece of



HyperDialer hooks up between your Mac and a telephone so that you can dial numbers directly from a Rolodex-type database.

cake. Actually, it's a pair of clicks. Click the headset cable from your phone into the receptacle on the HyperDialer box. Then click the HyperDialer's modular jack cable into the phone itself. Once you plug into the sound output on the Mac, you're in business.

All you need now is some software that generates the standard phone codes out the speaker port. While it is possible to write such a program yourself, most Mac users today will probably opt for HyperCard, which includes a built-in dial command that dials any phone number you give it. HyperCard comes from Apple with a phone-dialing button included, so there's literally no work involved. Just type the number you want to call into a field, or select the phone number on a card from your address stack and click on the phone icon. HyperDialer does the rest. Well, almost.

First, HyperDialer needs a dial tone before it can work. That means you have to take the receiver off the hook manually before you try to dial. So much for hands-off. You can't dial through the speaker phone, even without the HyperDialer, but this little box doesn't include the hardware necessary to force the off-hook condition that gives a dial tone. That's what modems do, but HyperDialer is not a modem.

Second, if you use HyperDialer with a Mac II, you'll run into problems, at least with some telephones. It seems, according to the HyperDialer technical support desk, that the Mac II puts out only one-sixth of the volume from its speaker jack as compared to the other members of the Macintosh family. As a result, I could not get the HyperDialer to break the dial tone on the phone I use most often. It worked fine on another, more standard unit, however, so I suspect that the problem is actually with the Mac II's sound output and not with HyperDialer itself. (The company indicated that it will soon have a modifier for the HyperDialer that will boost its output and make it more usable.)

HyperDialer is most useful when you use it in conjunction with a Rolodex-type program like QuickDex, SideKick, or the HyperCard stack, Focal Point. In the latter case, the stack semiautomatically logs and tracks outgoing calls. This additional functionality offsets the inconvenience of having to pick up the receiver to undertake what should have been hands-free dialing. If you have Focal Point or a similar program and can make use of this feature, then HyperDialer may make sense. Otherwise, let your fingers do the dialing.

HyperDialer ★★★½
List Price: $39.95. **Manufactured by:** DataDesk International, 7651 Haskell Avenue, Van Nuys, CA 91406; (818) 780-1673. **Version:** Mac II version expected to ship in August 1988. **Requires:** Any Mac. **Compatibility:** MultiFinder friendly.

— Dan Shafer

ENTERTAINMENT

PT-109



PT-109 is a memorable enough game but, like a bout of devastating seasickness, only for the worst of reasons. Though it comes from a good stable (Spectrum HoloByte — creator of Falcon, a flight simulator, and Solitaire Royale, a card game), it fails to live up to its lineage.

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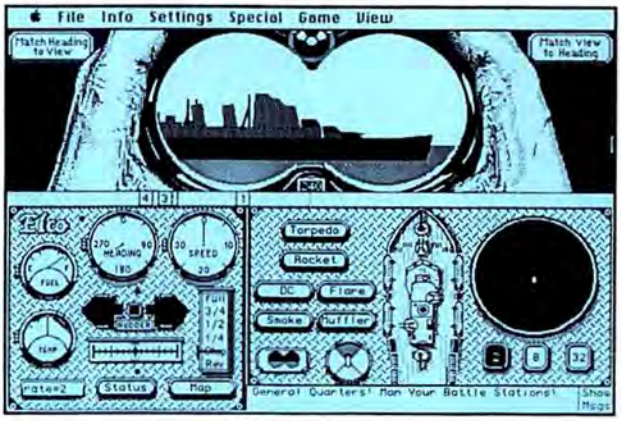
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Quick Clicks



Patrol the high seas in PT-109, a World War II battle simulation that is not unlike Gato — an older game also published by Spectrum Holobyte.

regarded well. Today, by comparison with what is out there, it's best described as boring and dull. Worse still, it is full of painful programming glitches. The basics of the program are similar to Spectrum HoloByte's once excellent but now dated submarine simulator, Gato.

In PT-109, you start by choosing a theater of war (Pacific or Mediterranean); selecting from different model PT boats (with different armament); and clicking to fight either a single patrol or an entire multimission campaign. A variety of 45 missions are included. And then you are off, controlling speed and heading to navigate a patrol.

Keyboard strokes toggle between different screens, including one showing the status of (or damage to) the boat, another showing the map, and still another illustrating the cockpit (the view controlling the weapons). Use the radar screen and binoculars to watch for the enemy and the radio to contact base. Enemy units include cruisers, destroyers, flack barges, submarines, and unarmed fishermen.

You attack with torpedoes, rockets, guns, and depth charges. Unfortunately, it all sounds much better than it is. Even in rapid deployment, a method of speeding up the action, it almost seems as if nine-tenths of the time is spent on fruitless patrol where (perhaps like the real thing) the biggest fear is that of crushing boredom. And, when it comes to combat, PT-109 is about as exciting as brewing coffee, consisting of little more than a quick run-in with weapons blasting.

Worse still, PT-109 seems full of programming glitches. In mid-game, when presumably most of the program is in memory, loading a "new patrol" can take an agonizingly long 34 seconds, during which the screen is "whited out." In combat, the program frequently "freezes" for anywhere between 10 and 30 seconds, apparently confused and overwhelmed by too many different things happening at once.

In three hours of play, PT-109 crashed four times. There are other problems. For some reason, the binocular view can be used only in the forward-viewing quadrant, not off to the side or rear. Somehow, when the rudder is damaged beyond repair, it still turns the boat. Ditto, the propellers. And, in certain instances, a smoke screen laid off the rear of the boat somehow manages to obscure the forward vision. Depth charges are of little use without a sonar system.

There was apparently concern at high levels of Spectrum HoloByte about putting out PT-109 so soon after the excellent Falcon, and quite rightly so. The two games simply don't compare. PT-109 will inevitably end up disappointing fans and denting the company's reputation for above-average fare. Don't bother with this one — it isn't worth the time or the money.

PT-109
List Price: $49.95. **Published by:** Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501; (415) 522-3584. **Version:** 1.0. **Requires:** 512K. **Compatibility:** Mac II friendly and MultiFinder hostile. **Copy Protection:** None

—Jay Palmer

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PROJECTED SALES FOR 1989*		
	CHIMMER	*BONANZA*
100K	NO	YES
50K	YES	YES
25K	YES	YES
10K	YES	YES
5K	YES	YES

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* *SALES FIGURES FOR 1989 ARE JUST A WILD GUESS*

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The Brassy Bottom Bonanza

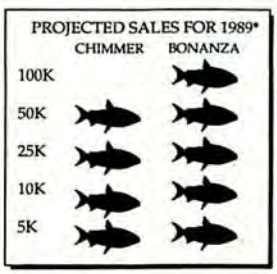


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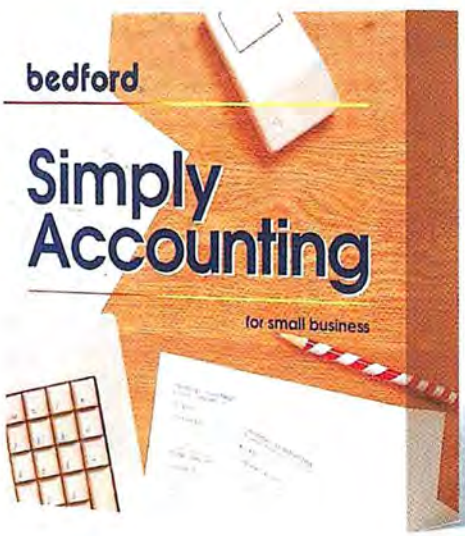
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by Jim Seymour

A Descent Into Font Hell

He was aghast when I clicked to pull down the fonts menu. I use a 19-inch SuperMac monitor, and the pull-down box is so long it reaches nearly to the bottom of the huge screen. I don't know how many fonts were listed, but there were many more than you find in the LaserWriter Plus.

"My God," my friend said, as he looked over my shoulder. "That looks like A Descent Into Font Hell!"

Well, maybe. For some people. For me, it's been an exhilarating adventure. Because for the past several months I've been pawing through PostScript fonts available from a number of vendors, looking for the good, the bad, and the ugly — or, at least, the useful and the useless.

The quick report: Stay with the Adobe-supplied PostScript fonts for now. But keep your eye peeled for Compugraphic's entry into the PostScript fonts market later this year.

Actually, I don't mean to dismiss so lightly the PostScript font packages from other vendors. Most work OK, and some even look OK. But few I've found look *good,* and most are right out of the ransom-note genre.

(Every time I use that phrase in print, I get letters from readers too young to remember those old black-and-white "Crazed Killer Snatches Baby, Demands 50 Gs" B-movies of the '40s and '50s. So that no one could later match their handwriting to the evidence, the cinematic kidnappers always pasted up their ransom notes from individual letters of large type clipped from grocery-store ads in newspapers. The effect was much like what we saw so often in the first days of the Mac, when the letters we all got from friends were printed in nine fonts, in seven sizes, with lots of ugly outline, shadow, boldface, and italic stuff mixed in. You get the idea.)



Anyway, I should add my own bias here: I've been a graphic designer, know type and design, and have a preference for fonts where you can tell the *A*s from the *J*s. Gimmicky, overblown fonts destroy the integrity of a printed piece — whether it's a business letter or an elaborate brochure — and leave me cold. I recognize that one person's preference is another's poison, though, so let me say that if you like your business letters printed in 36-point Sworsh with drop shadows, screened vertical strokes, and outlined descenders — well, have fun.

Back to the real world.

Here are my collected tips, based on long talks with Mac graphics mavens and on my own experience, for making the most of your laser-font-buying dollars. If you have unlimited funds and vast patience, these won't be so important; but even if you're tempted to buy every font in existence, remember that you're going to have to deal with installing and using them. Don't buy more than you're sure you can use.

• **Don't Duplicate LaserWriter Fonts.** Sounds obvious, sure; but I've run into people who actually bought Adobe fonts which duplicated those already stored so expensively in ROM chips inside their LaserWriters. And who then had to wait, of course, for font downloads, rather than enjoying the speed of the ROM fonts already installed in the printer.

It's an easy enough mistake to make: Adobe packages and sells separately those same fonts. Neophytes — which includes a lot more of us than we'll usually admit when we get into things such as picking fonts — can get confused and waste money.

• **Concentrate on Font Families.** Rather than buying fonts helter-skelter — here a sans-serif face, there a serif face, there an oddball display face — concentrate on building up your type library by adding font packages that logically extend what you already have in your printer.

One of the most useful additions to a Mac-driven LaserWriter kit, for example, is Adobe's Helvetica Black/Helvetica Light package, which rounds out the most important part of the Helvetica range. (You'll find Helvetica Black far more important and useful than Helvetica Light, but since the Light variation comes in the box for free, don't quibble.)

• **Watch Out for the Helvetica Narrow Versus Helvetica Condensed Problem.** Owners of LaserWriter Plus printers (and others that have the same internal fonts) in effect already own Helvetica Narrow, an ugly, highly condensed font.

You can buy separately from Adobe a PostScript soft font called Helvetica

Condensed, which may sound redundant. The simple truth is that Helvetica Narrow is a functional font, while Helvetica Condensed is a truly beautiful one.

The Narrow font isn't really in your LaserWriter; it's algorithmically condensed (a fancy way of saying squeezed down from standard Helvetica) on the fly when you print. The Condensed font, on the other hand, was actually *designed* as a condensed font. If you find you're using a lot of Helvetica Narrow, consider buying the Condensed font. And please don't mix the two in a single document.

• **Look at Lucida.** Among the great bargains in the Adobe soft-fonts line are their Lucida and Lucida Sans Serif packages — fonts that you won't find elsewhere and that look especially good in 300-dpi laser-printer output.

• **Install All the Screen Fonts.** Adobe's font disks include, in addition to the outlines for the font that the printer actually uses, a set of scaled screen fonts that give you a reasonable to sometimes very good representation on-screen of how your finished pages will look.

These scaled screen fonts are supplied in many sizes. While it's true that the Mac can do a pretty good job of scaling up and down if you install just the 10-point and 12-point sizes, why limit yourself to crude extrapolations of those sizes? Install all the sizes of screen fonts for the fonts you buy.

• **Be Wary of Oddball Display Fonts.** Striking headline fonts, such as ITC Machine, can be wonderful. In fact, Machine itself really *is* wonderful: I love it. But you'll get relatively little use out of such bold, idiosyncratic fonts. Concentrate your money on fonts you'll want to use again and again.

However — and note that this is where I work both sides of the street — Adobe packages ITC Machine with American Typewriter, a wonderful font for heads, body copy, anything. I love the play against character (dare I say "casting against type"?) of using a baldly manual-typewriter-look font on a computer. So since you'll probably want to get American Typewriter, you'll get Machine for free.

• **Don't Buy Similar Fonts.** No one needs, for example, both Glypha and Lubalin Graph — two similar fonts in the Adobe line.

And unless you're a well-heeled collector of fonts, save your money or maybe buy a second, very different font package.

That's it for now on using soft fonts on your Mac. Recursion counts in life; I'll be digging through the next crop of new soft fonts — including those sensational new Compugraphic fonts — and will report again in a few months on what it's like here in Font Hell.

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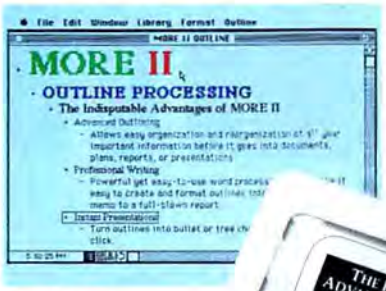


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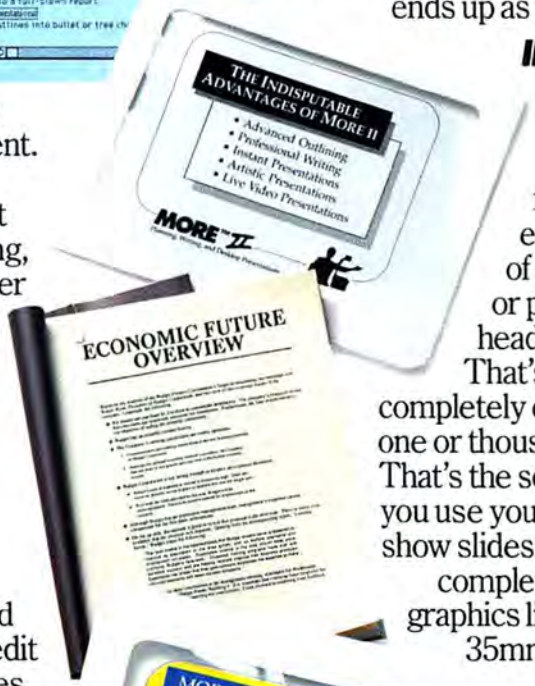
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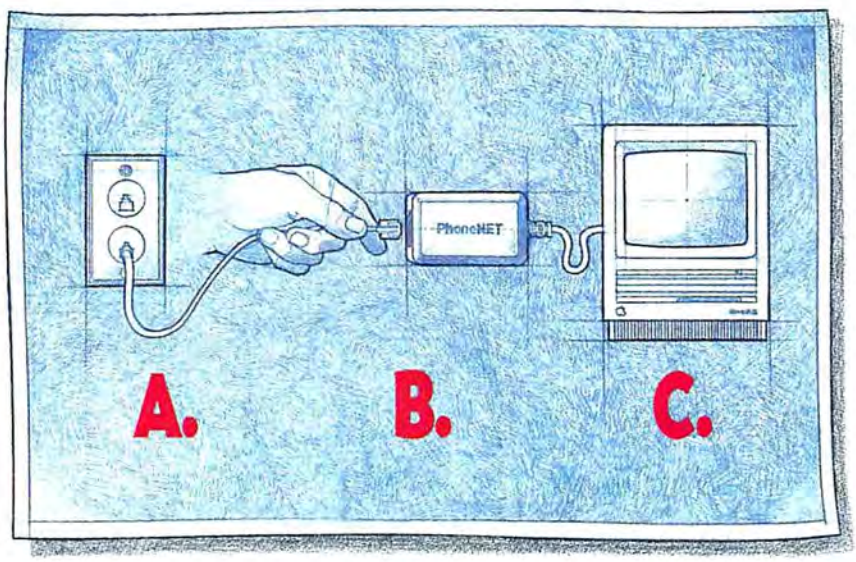
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by Robert R. Wiggins

Big Problems

Computers have been around now for over 30 years. And while computer companies have come and gone, technology has kept making computers smaller, faster, and cheaper. The tiny Macintosh of today can run rings around the room-sized computers of 25 years ago. As the technology has advanced, the discipline of computer science has also grown. As computer systems become more complex, the people systems that take care of them become more sophisticated as well. Computer departments have evolved into management information systems groups. The people who work with and maintain computers have learned a lot of lessons the hard way, by facing big problems and developing solutions.

The Macintosh was designed to be the computer for "the rest of us." By making the Macintosh operating system very complex, Apple was able to create an interface that is easy to learn and easy to use. And it has proven so successful that other companies are trying to do the same thing. By making computers more accessible, Apple has succeeded in getting the Macintosh into the hands of many people who know little or nothing about the care and feeding of computers. These people are now facing the same problems, on a smaller scale, and learning the same lessons their mainframe brethren learned years ago, and they're learning them the hard way.



BIG PROBLEM #1: BACKUP

As long as there have been computers, there have been data loss disasters. Every storage medium yet devised is susceptible to losing data, and Macintosh disks are no exception. Macintosh owners have faced an extra problem here. Since, in the mainframe world, tape storage was developed before disk storage, the technology to make fast backups was developed along with the move to disks. For the Macintosh, tape systems have been an afterthought. Backup programs for the Macintosh have been steadily improving, but without fast, efficient, and inexpensive tape hardware, backup will remain a dreary chore. Because of this, most people will not make the effort until they have personally experienced a data disaster.

This is a painful lesson to learn the hard way, so back up regularly despite the difficulty, and hope the hardware manufacturers help you solve this problem better in the future.

BIG PROBLEM #2: RECOVERY

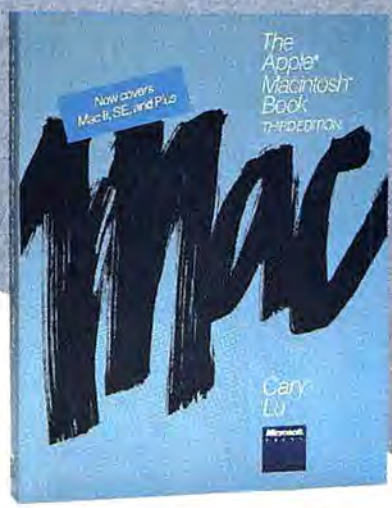
Even with a regular backup scheme in effect, recovering data after a loss poses a problem. Restoring data from a backup copy only gets the data back up to the point of backup. In most mainframe environments, this means that up to 24 hours' worth of work can be lost. On the Macintosh, it can mean days or weeks of lost work, depending on how faithfully you back up.

Mainframe developers have solved this problem using a variety of techniques. Most mainframe database systems log all transactions against the database, and after a disk restore, these logs are used in forward recovery, where all transactions are reposted to get the database back to its state at the point of failure. Another method is the use of "shadow" (duplicate) files, which are updated instead of the real files. The real files are then updated once daily and backed up immediately afterward. Some systems use "duplexing," where all files are written twice, to two different disks. If a disk fails, there is an exact copy ready to become the master disk.

Macintosh developers have been slow to adopt these techniques, although some recent programs use variants of them. FullWrite Professional, for example, has an AutoSave feature and a Backup On Saves feature, which together are similar to duplexing. WordPerfect has a timed backup facility that creates what is essentially a shadow file. These are certainly welcome enhancements, and more business software should utilize these techniques in the future. Unless developers put these kinds of recovery mechanisms in their software, you are out of luck, since there is little you can do. Oh, you can make your own shadow files by doing a Save As immediately after opening a document to work on, doing frequent saves, then doing another Save As under the original name to replace the original file when you're through working on it. Of course, be sure that the original file and your shadow file are on two different disks. And be sure not to get the two files confused. And be sure to save often. But until software developers put these

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BIG PROBLEM #3: SYSTEM CRASHES

In a mainframe environment, one of the biggest problems faced is the system crash. A system outage on a mainframe can affect hundreds or even thousands of people. Even if the system can be brought right back up,

There aren't many Macintosh users who haven't seen the System Bomb dialog box. And while hundreds of people aren't affected, one person is very inconvenienced: you.

some mainframe systems take as long as 20 minutes to fully initialize. So the goal of most mainframe computer operations is NO unscheduled downtime, and many come very close to this goal. How do they do it? Two factors are mainly responsible.

Because mainframe outages are so serious, mainframe operating systems are designed to recover from most errors. IBM's major mainframe operating system, MVS, can even handle many hardware malfunctions and limp along until the problem can be repaired. Mainframe operating systems also keep application programs isolated from one another, so if one program bombs the system can continue to function.

The other factor that contributes to system stability, and one that can be controlled by the information systems group, is overall stability. A lesson that has been learned the hard way over the years is that changes cause problems. Changes to software, changes to hard-

ware, even changes to procedures lessen the stability of the system and can lead to system outages. So savvy data center managers track all changes made to the system very carefully and insist that there be fallback plans.

If you've used a Macintosh for very long, you've run across this problem yourself. There aren't many Macintosh users who haven't seen the System Bomb dialog box. And while hundreds of people aren't affected, one person is very inconvenienced: you. You can also lose data in a system crash and face the other problems mentioned.

> Sometimes it's interactions between different programs that cause a problem, so add things one at a time, and be prepared to take them back out if problems develop.

Fortunately, this is a problem that Apple is working on. For multitasking to work, the operating system has to be able to keep going when a program bombs. If you've used MultiFinder, you've probably seen the "Application has unexpectedly quit" message that you get instead of a system bomb in some cases. You can expect Apple to continue to improve the Macintosh operating system in this regard.

This is also a problem that you can do something about, by heeding the lesson learned in the mainframe world. Changes can cause problems. So be careful when adding new software, especially software that modifies the operating system, such as INIT files. Sometimes it's interactions between different programs that cause a problem, so add things one at a time, and be

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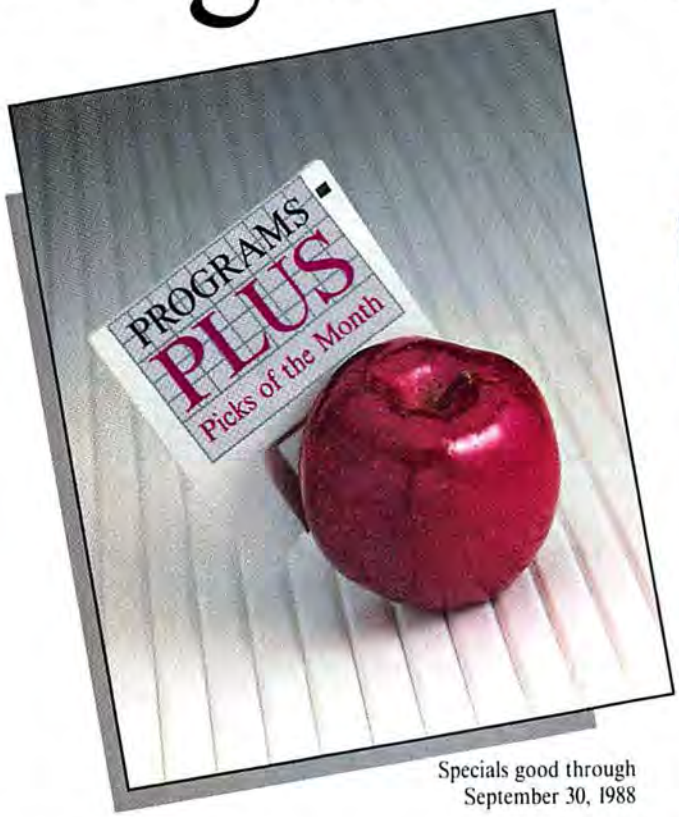
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Programs & Peripherals



Specials good through
September 30, 1988

FileMaker 4 by Nashoba Systems, Inc.



FileMaker 4 is the new, multi-user version of what was already an attractive and powerful package. It's never been easier to find, calculate, sort and print out the vital information you need. You can include photos and graphics from other applications, and share this information with others on an AppleTalk network. *FileMaker 4* comes standard with templates for the most used applications, such as Rolodex cards, mailing labels, invoices, statements and a good checkbook with register. *FileMaker 4* prints beautifully on LaserWriter and ImageWriter printers, and works with the latest system software such as MultiFinder.

FileMaker 4 ..... **179.**

MacKids Educational Programs by Nordic Software

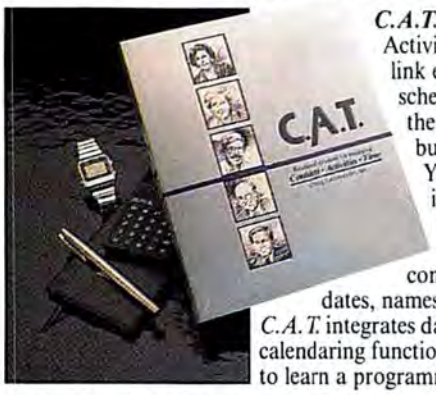


MacKids is a complete series of twelve quality educational software products for the Mac specifically designed to teach and entertain kids. Whether your children are preschoolers or young adults, there's a *MacKids* package that will give them the learning edge.

Preschool Disk 1 (3-7), Preschool Disk 2 (3-7), CoinWorks (4-12), ClockWorks (4-10), Early Elementary 1 (6-9), Lemonade Stand (6-16), FlashWorks (6-adult), Naval Battle (6-adult), Word Search (6-adult), Alphabetizer (7-adult), EarthWorks (10-adult), or BodyWorks (10-adult).

Each Program ..... **29.**

C.A.T. by Chang Laboratories



C.A.T. stands for Contacts-Activities-Time and lets you link events, people, and schedules to keep track of the relationships in your business or personal life. You can organize contact information into views that allow automatic follow-up on strategies, contacts, correspondence, dates, names, key facts and figures. *C.A.T.* integrates database, mailmerge, and calendaring functions without you having to learn a programming language!

C.A.T. (Contacts Activities Time) ..... **229.**

Desk Accessory Programs

Affinity Microsystems Tempo II	89.	**Greene, Inc.** QuickDex 1.4A	32.
AffiniFile	46.	**Imagine Software**	
Beyond Inc. Menu Fonts 2	32.	Smart Alarms & Appointment Diary	35.
Borland SideKick V2.0	59.	**Mainstay** Think'n Time	61.
CE Software DiskTop 3.0	28.	**Olduvai Software** DA-Switcher II	25.
Cortland Top Desk	32.	**Solutions, International** Super Glue	52.
Deneba Software Comment 2.0	56.	SmartScrap & The Clipper	35.
Electronic Arts Disk Tools Plus	31.	**Symmetry** HyperDA *(Req. 512K)*	38.

Languages

Borland Turbo Pascal	65.	**Microsoft**	
Turbo Pascal Numerical Methods	65.	Microsoft Basic Interpreter 3.0	62.
Turbo Pascal Tutor	45.	Microsoft Basic Compiler	125.
Cognition Technology MacSMARTS	135.	**Smethers & Barnes** Protyper	75.
Consulair		**THINK Technologies** Lightspeed C	95.
Macintosh 68000 Development System	59.	Lightspeed Pascal	65.
Insigna SoftPC	489.	**T.M.L.** T.M.L. Pascal II	
Mainstay V.I.P. 2.5		*(Includes MPW)*	85.
(Visual Interactive Programming)	109.	T.M.L. Source Code Library II	49.

Utility Software

ALSoft Disk Express 1.10	26.	**Olduvai Software**	
Font/DA Juggler Plus	32.	Icon-It! *(Assign Icons to Menu Items)*	39.
Berkeley System Design		Read-It! TS *(For Thunderscan)*	79.
Stepping Out II	54.	Read-It! O.C.R. *(For Image Scanners)*	199.
Beyond Inc. Fore Runner	32.	**Silicon Beach Software**	
CE Software		Silicon Press	41.
QuicKeys *(Macro Program)*	54.	**Software Power**	
Central Point Software		Power-op Disk Optimizer	33.
Copy II Mac *(Includes MacTools)*	20.	**SRT** MacTree	38.
Design Software/Electronic Arts		**SuperMac Software** SuperSpool 5.0	54.
DS Backup	49.	SuperLaserSpool 2.0	82.
Dove RamSnap	21.	Diskfit 1.4	54.
Emerald City Software		Sentinel 1.0	155.
LaserTalk	187.	**Symantec**	
Fifth Generation Systems		Symantec Utilities for Mac *(S.U.M.)*	59.
FastBack For The Macintosh	54.	**Symantec/Turner Hall Publishing**	
Suitcase or Power Station	37.	MacSQZ!	49.
Ideaform Disk Quick V2.10	25.	**Williams & Macias** Disk Finder	29.
Infosphere Liaison	129.	myDiskLabeler w/Color	31.
LaserServe *(LaserWriter Print Spooler)*	62.	myDiskLabeler w/LaserWriter Option	34.
Microlytics, Inc. GOfer	49.	**Working Software, Inc.**	
Microseeds Redux	65.	Findswell 2.0 *(Document Finder)*	36.

Communications Software

Compuserve		**Freesoft** Red Ryder V10.3	55.
Compuserve Starter Kit	24.	**Hayes** Smartcom II 3.0	88.
Grolier On Line Encyclopedia	32.	**Palantir** InTalk V3	119.
Compuserve Navigator	45.	**Software Ventures**	
DataViz MacLink Plus with Cable	145.	Microphone II *(Includes Glue)*	229.
Dow Jones Desktop Express	95.	**Traveling Software** LAP-LINK	85.

to Polish Up Your Mac...

TOPS for the Mac by TOPS, A Sun Microsystems Co.



TOPS for the Mac transforms any Macintosh with at least 512k of memory into a *TOPS* network station. The *TOPS* network allows you to share files not only with other Macintosh stations, but with IBM PC's, Sun Workstations, and other computers. Included with *TOPS* are useful programs for print spooling PostScript files, and converting file formats between many popular DOS and Macintosh applications. Sharing network resources and information is quickly becoming essential in environments where different computer types are being used together, and *TOPS* has quickly become *the* standard way to accomplish this quickly and easily.

TOPS for the Mac ..... **119.**

New Turbo Mouse by Kensington



Here is the best reason around to retire your mouse, the ***New Turbo Mouse*** from Kensington. Twice as fast as a regular mouse, while taking up half the space. When rolling the ball slowly, you can attain 200 CPI precision. Roll it quickly and you'll fly across even the largest "Big Screen". It uses half the space of the normal mouse, and since it doesn't move all over your desk, it's at home amidst a sea of papers as well as an empty desk. One of the mouse buttons operates like a standard mouse button, while the other is a "Click Lock". You can also program your mouse to perform one of six time saving functions when you click both of the buttons at once.

New Turbo Mouse ..... **109.**

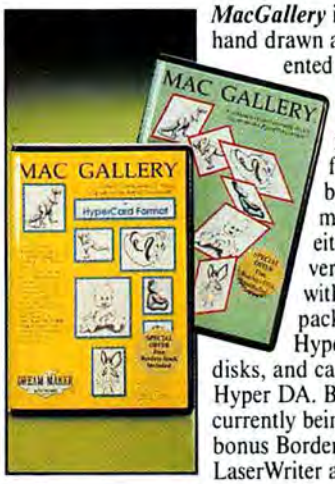
Fast Forms by Shana Enterprises



Fast Forms is the first entry into what will be an extremely competitive market, the production of high quality forms right on your Mac. And, after reviewing the package, we're ready to call *Fast Forms* the winner, hands down. All the features we were hoping for were included, such as standard line, circle, box and text editing. But *Fast Forms* goes further, letting you choose from grey screens, hairlines, variable type sizes and customized horizontal and vertical grids. You can also place data entry fields where you want data filled in, and *Fast Forms* will format and recalculate the fields automatically, and then allow you to transfer the data to another program, or print directly to your dot matrix or laser printer.

Fast Forms ..... **79.**

MacGallery by Dream Maker Software



MacGallery is a collection of over 400 pieces of hand drawn artwork created by a team of talented artists. The first volume of *MacGallery* covers a wide range of topics including holidays, sports, food, special occasions, nature, fantasy, religion, phrases, teddy bears, mortise cuts, borders, and more. *MacGallery* is available in either HyperCard Stack or MacPaint versions. The MacPaint version works with any PAINT program and comes packaged on two 400K disks. The HyperCard version comes on two 800K disks, and can be used with HyperCard or Hyper DA. Both versions of *MacGallery* are currently being shipped with over 50 pieces of bonus Border Art, and are compatible with the LaserWriter and ImageWriter series of printers.

MacGallery ..... **28.**

ReadySetShow by Manhattan Graphics



Presentation business graphics have just come of age with the recent release of ***ReadySetShow.*** Whether you're selling an idea or a product to management or customers, this program will make what you have to say crystal clear in a beautiful way. *ReadySetShow* includes fully integrated charts and graphs, text handling, and several essential time savers such as glossaries, style sheets and spell checking. Use the extensive library of design templates, wide file import capability and broad choice of output devices to create advanced, professional looking slides and transparencies. *ReadySetShow*, the presentation graphics package of the future, available today!!!

ReadySetShow ..... **289.**

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SD Series MacStack SD30 *(Mac+/SE/II)* 615.
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PRO-SE Series 45SE/1 or 45SE/R 735.
PRO-II Series 60-II/1 735.
PRO-II Series 100-II/1 1169.
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Cutting Edge 800k Drive *(Beige or Plat.)* 175.
Cutting Edge Wedge XL 30 Plus SCSI Hard Drive 629.
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68020 Accelerator Boards for Mac SE
MSE 1 (16 Mhz) 585.
MSE 2 (16 Mhz w/1MB) 779.
MSE 3 (16 Mhz w/Math Co-processor) 779.
MSE 4 (16 Mhz w/1MB and Math Co-processor) 975.
MacSnap 524 *(512K to 1MB)* 215.
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MacSnap 548E *(512E to 2MB)* 425.
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MacSnap 2SE 299.
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SCSI Interface/Port 85.
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Everex Emac 20D *(20Mg Hard Disk)* 520.
Emac 20 Deluxe 585.
MacMemory, Inc. Turbo SE *(16 Mhz 68000 Accelerator for the Mac SE)* 369.
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MacBottom IHD-144 *(Mac II)* 2195.
WSI *(connects HD-20 SCSI)* 295.
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Rodime 45 Plus *(Ext. 45MB SCSI)* 939.
Rodime 450RX *(Int. 45MB Mac SE/II)* 829.
Rodime 60 Plus *(Ext. 60MB SCSI)* 1039.
Rodime 100 Plus *(Ext. 100MB SCSI)* 1169.
Rodime 140 Plus *(Ext. 140MB SCSI)* 1319.
Rodime 1000 RX *(Int. 100MB MacII)* 1045.
Rodime 1400 RX *(Int. 144MB MacII)* 1669.

Printers & Digitizers

AST Research TurboLaser P/S 3559.
TurboScan *(Sheetfeed model)* 1199.
TurboScan *(Flatbed model)* 1329.
Koala Technologies Corp.
MacVision 2.0 *(Digitizer)* 225.
Kurta IS ADB Tablet 259.
Cordless 4 Button Cursor 99.
Seikosha SP1000 *(Imagewriter Comp.)* 229.
Summagraphics MacTablet 12x12 size 379.
Bit Pad Plus *(MacSE & MacII)* 335.
ThunderWare ThunderScan V4.0 with Power Port *(Mac 512K, 512K Enhanced, MacPlus, and Macintosh SE)* 199.
Mac II Power Accessory 42.

Accessories

Abaton ProPoint *(ADB TurboMouse for Mac SE & Mac II)* 117.
Asher Engineering Turbo Trackball *(Mac & Mac+ or Mac SE & Mac II)* 69.
Bech-Tech
Fanny Mac *(Beige or Platinum)* 65.
Curtis Manufacturing
Emerald-Surge Suppressor-SP-2 36.
Ruby-Surge Suppressor-SPF-2 55.
Cutting Edge Cutting Edge EADB-I05 *(Mac SE & Mac II)* 135.
DataDesk MAC-I01 Keyboard/Beige *(128k/512k & MacPlus)* 139.
MAC-I01 ADB Keyboard/Platinum *(Mac SE & Mac II)* 139.
Ergotron Mouse Cleaner 360° 15.
MacTilt or MacTilt SE *(Platinum Color)* 68.
Farallon MacRecorder Sound System *(Mac SE or Mac II)* 145.
I/O Design
Mac Luggage in Navy or Platinum Gray
Macinware Plus Carrying Case 69.
Macinware SE Carrying Case 79.
Imageware II Carrying Case 49.
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Printer Muffler 132 58.
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A+ ADB Mouse *(Mac SE/Mac II)* 85.
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Imagewriter II Case 49.
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Macintosh SE & Extended Kybd Case 69.
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Imagewriter II Carry Case Blk. 49.
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Emac 2400 Baud 225.
Hayes Microcomputing
Smartmodem 1200 299.
Smartmodem 2400 449.
Migent
Migent Pocket Modem *(ext. 300/1200 Baud)* 115.
Novation
Novation Parrot 1200 109.
Practical Peripherals
Practical Modem 1200SA 109.
Practical Modem 2400SA 189.
MacCommpack *(2400SA w/Microphone & Cable)* 249.
Prometheus
Promodem 2400M Ext. *(Software & Cable)* 199.
Promodem 1200 *(Hayes Compatible)* 239.
Promodem 2400 *(Hayes Compatible)* 309.
Supra Corporation
Supra Modem 2400 149.
U.S. Robotics
Courier 1200 *(Hayes Compatible)* 199.
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Blythe Software Omnis 3 Plus/*Express* 275.
Borland Reflex Plus 165.
Ducsoft, Inc. Applications & Routines for 4th Dimension Vol. I 86.
Fox Software Fox Base Plus 214.
Fox Base Runtime 162.
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Microsoft Microsoft File 119.
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McMax *(dBase III Compatible)* 178.
Nashoba Systems FileMaker 4 *Special* 179.
Nordic HyperCONTROL 42.
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GeoQuery 275.
ProVUE Development OverVUE 2.1E 149.
Software Discoveries RecordHolderPlus 45.
Telegraphics Hypertutor 30.

Business Software

Abacus StatView II *(Mac+, SE, II w/68020 & 68881)* 369.
Access Trapeze 2.1 185.
Ashton Tate Full Impact 319.
Borland Eureka! The Solver 129.
BrainPower StatView 512 Plus 175.
Math View Professional 145.
Bravo Technologies MacCalc 79.
Chang Laboratories
C.A.T. Contacts•Activities•Time *Special* 229.
Claris MacProject II 2.0 395.
Deneba Software Xtra 2.0 109.
Legisoft/Nolo Press WillMaker 3.0 35.
Lotus Jazz 1A 189.
Lundeen & Associates
WorksPlus Commands 60.
MacroPac International
101 Macros For Excel 44.
Mainstay Think 'n Time 61.
Mac Flow 2.0 or Mac Schedule 115.
Capture 38.
Micro Planning Software
Micro Planner 6.0 349.
Microsoft Microsoft Excel 1.5 249.
Microsoft Works 1.1 with Spellswell 185.
Microsoft Multiplan 1.11 119.
Micro Systems Software Analyze! 99.
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Guide Envelope System 99.
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Bulk Mailer Plus 195.
Shana Enterprises Fast Forms *Special* 79.
Synex Mac Envelope 19.
Mac Invoice 32.
Systat Systat 3.1 *(Specify Mac 512k, MacPlus, or Mac II)* 459.

Word Processors & Desktop Publishing

Access Mind Write 2.0 129.
Mind Write Express 159.
Allan Bonadio Associates
Expressionist 2.0 84.
Aldus Corporation PageMaker 3.0 475.
Ashton Tate FullWrite Professional 275.
Claris MacWrite 5.0 119.
Letraset Ready, Set, Go! 4.0 279.
Microsoft Microsoft Word 3.02 249.
Microsoft Write 1.0 113.
Postcraft International, Inc. Laser FX 115.
Quark, Inc. QuarkXPress V2.0 Call
Symantec More 1.1C *(Color Version)* 175.
Symmetry Acta V2.0 36.
T/Maker Company WriteNow V2.0 98.
Word Perfect Corporation Word Perfect 185.

Spelling & Grammar Checkers

Aegis Development
Doug Clapp's Word Tools 42.
A.L.P. Systems MacProof 3.0 *(Requires MacPlus)* 115.
Deneba Software
Coach Merriam Webster's Thesaurus 2.0 36.
Spelling Coach 3.0 *(Webster's/Medical/Legal/Hyphenation)* 54.
Spelling Coach 3.0 Professional *(Adds Definitions & Thesaurus)* 109.
Spelling Coach Professional Multi-User 279.
Electronic Arts Thunder! 1.23 30.
Lundeen & Associates
WorksPlus Spell 1.1 46.
Microlytics, Inc.
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Sensible Software Sensible Grammar 55.
Sensible Speller 48.
Working Software, Inc. Spellswell 2.0 42.
Lookup *(Makes Spelling Suggestions)* 29.

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Layered Insight One Write 189.
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Dollars & Sense 4.0 81.
North Edge Software Timeslips III 119.
Peachtree Back To Basics Professional *(GL/AR/AP/INV)* 159.
Survivor Software
MacMoney 3.0 *(Enhanced Version)* 62.

Networking Software & Hardware

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Imagine Software
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Microsoft Microsoft Mail 1-4 users 195.
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Aldus Freehand 379.
Altsys Corp. FONTastic Plus 2.0 59.
Fontographer 2.2 239.
Ashton Tate Full Paint 75.
Broderbund Print Shop 36.
Casadyware Fluent Fonts 2.0 *(2-Disk Set)* 26.
Fluent Laser Fonts Vol. I-19 *(ea)* 45.
CE Software Calendar Maker 3.0 28.
Claris MacPaint 2.0 119.
MacDraw II 2.0 309.
Computer Friends Modern Artist 109.
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prepared to take them back out if problems develop.

We're coming to the end of my allotted space, and we're only halfway through the list of problems (it turned out to be a big list). The rest will have to wait for next month. In the interim, think about these problems. Where possible, modify your work habits so you can avoid learning the same lessons the hard way. And let software developers know the kinds of features business users need. Most product registration cards have a place for general comments, or you can always write a letter to the company.

ERRATA

In my June column, I mentioned a product in passing called PCSoft, an MS-DOS emulator for the Mac II done with software. We got letters, we got phone calls. Many people wanted to know more. The problem was that the product is actually called SoftPC. I goofed. If you want to know more about SoftPC, try your dealer or contact Insignia Solutions Inc. at 1255 Post Street, Suite 625, San Francisco, CA 94109. That's SoftPC.

Also in June, I made HyperDA a Pinstripe Pick. That's even the right name. But I got the company that makes it wrong. So I'm picking it again this month, and this time the right company is getting credit.

PINSTRIPE PICKS

Some products recently released or upgraded that are worth looking into if you use your Macintosh in business:



HyperDA: (Symmetry) A desk accessory that gives you read-only access to HyperCard stacks with a lower memory requirement.



Suitcase: (Fifth Generation) The popular utility, which allows virtually unlimited fonts and DAs, has both a new publisher and a new version.



Excel: (Microsoft) The most frequently picked spreadsheet program has been upgraded to version 1.5, with version 2.0 on its way.



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Wm. F. Buckley, Jr.

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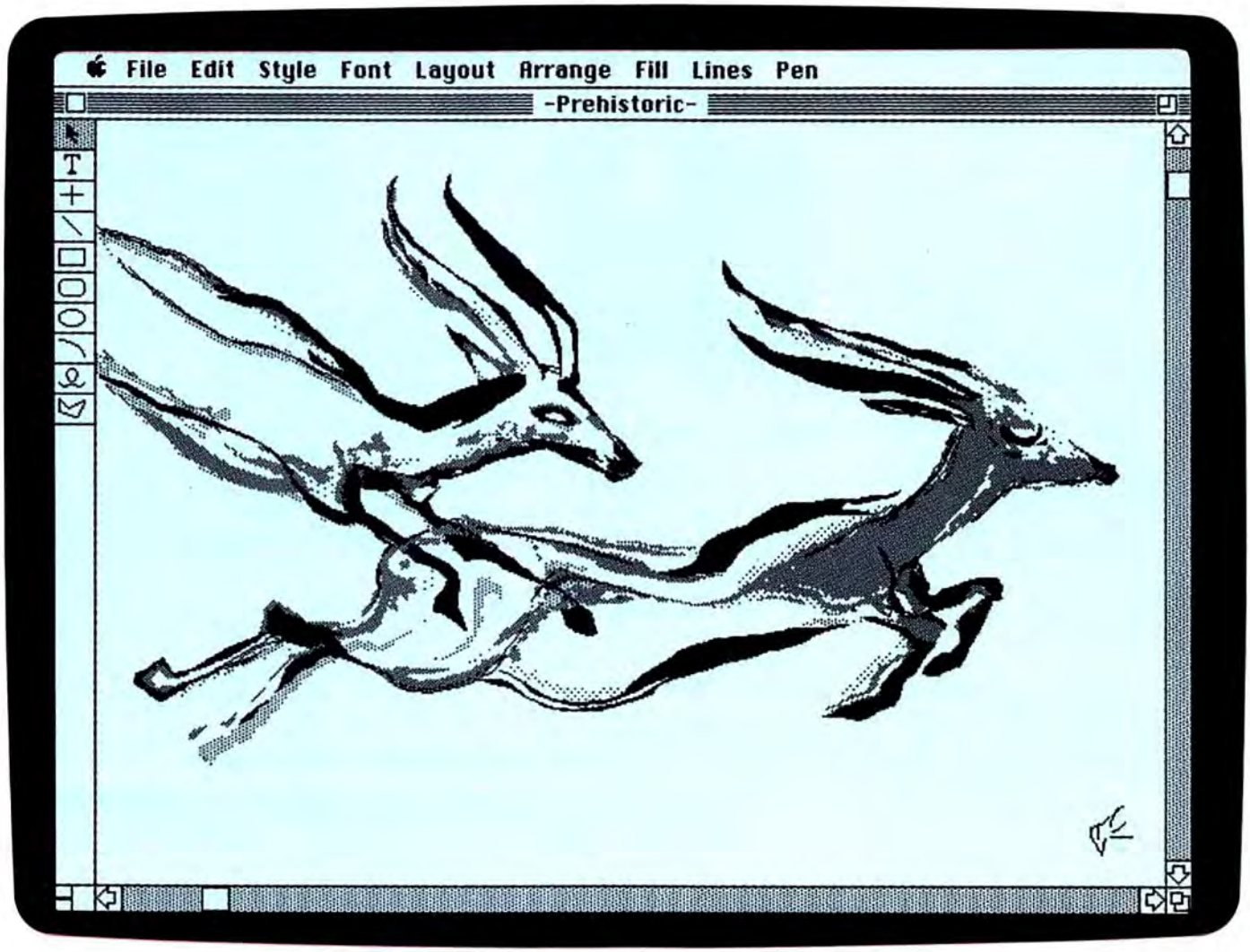
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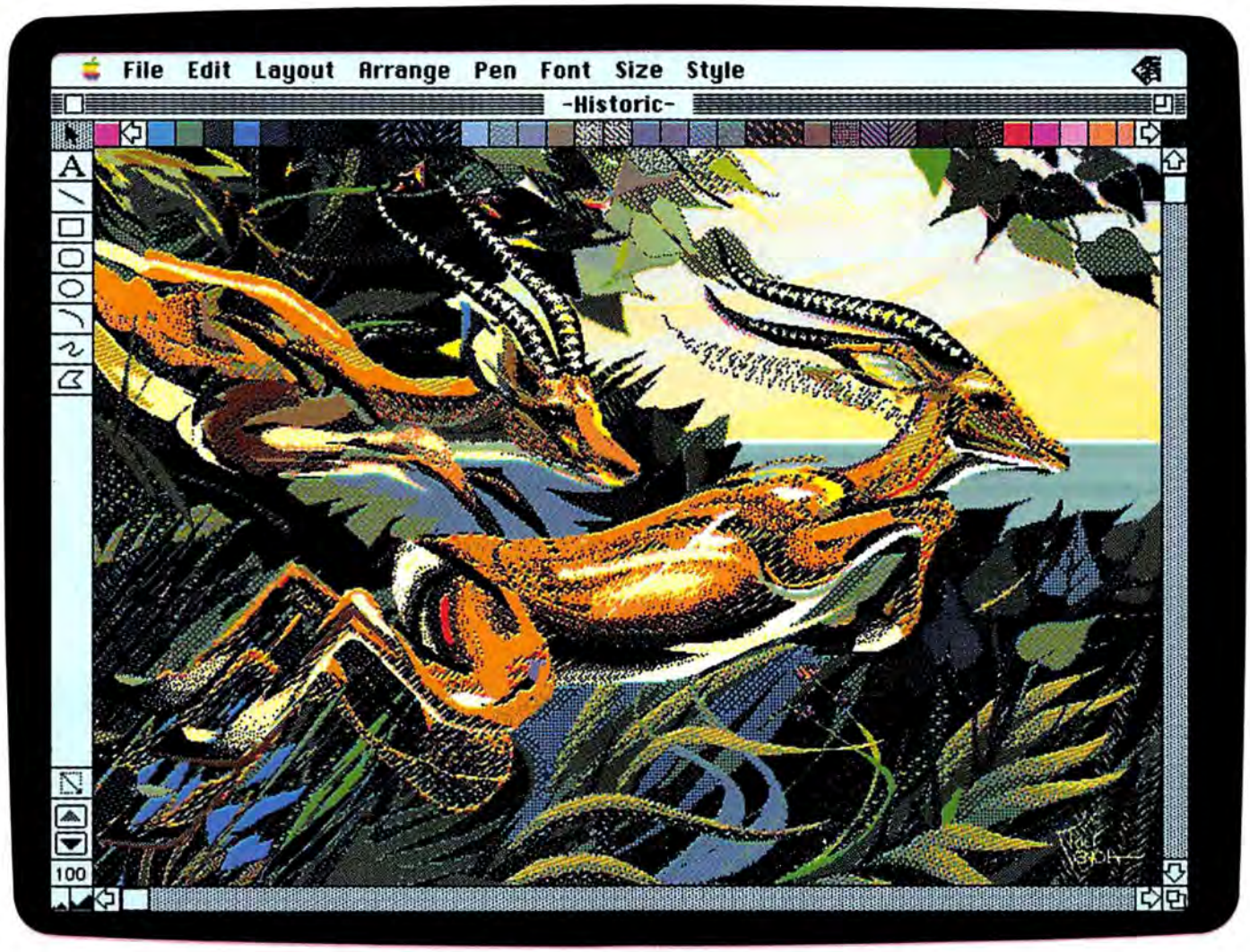


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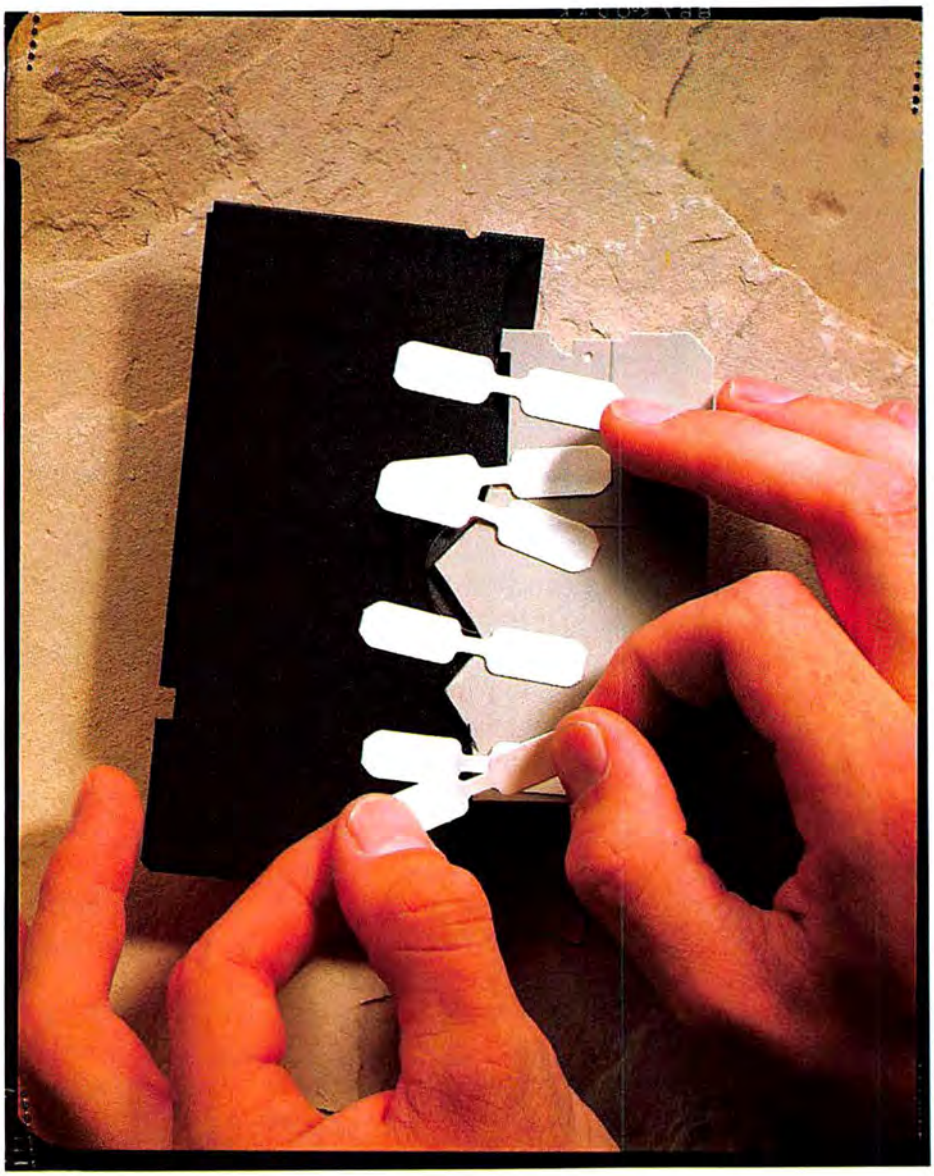
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SPECIAL REPORT

MS-DOS/MAC Connectivity

BY HENRY BORTMAN

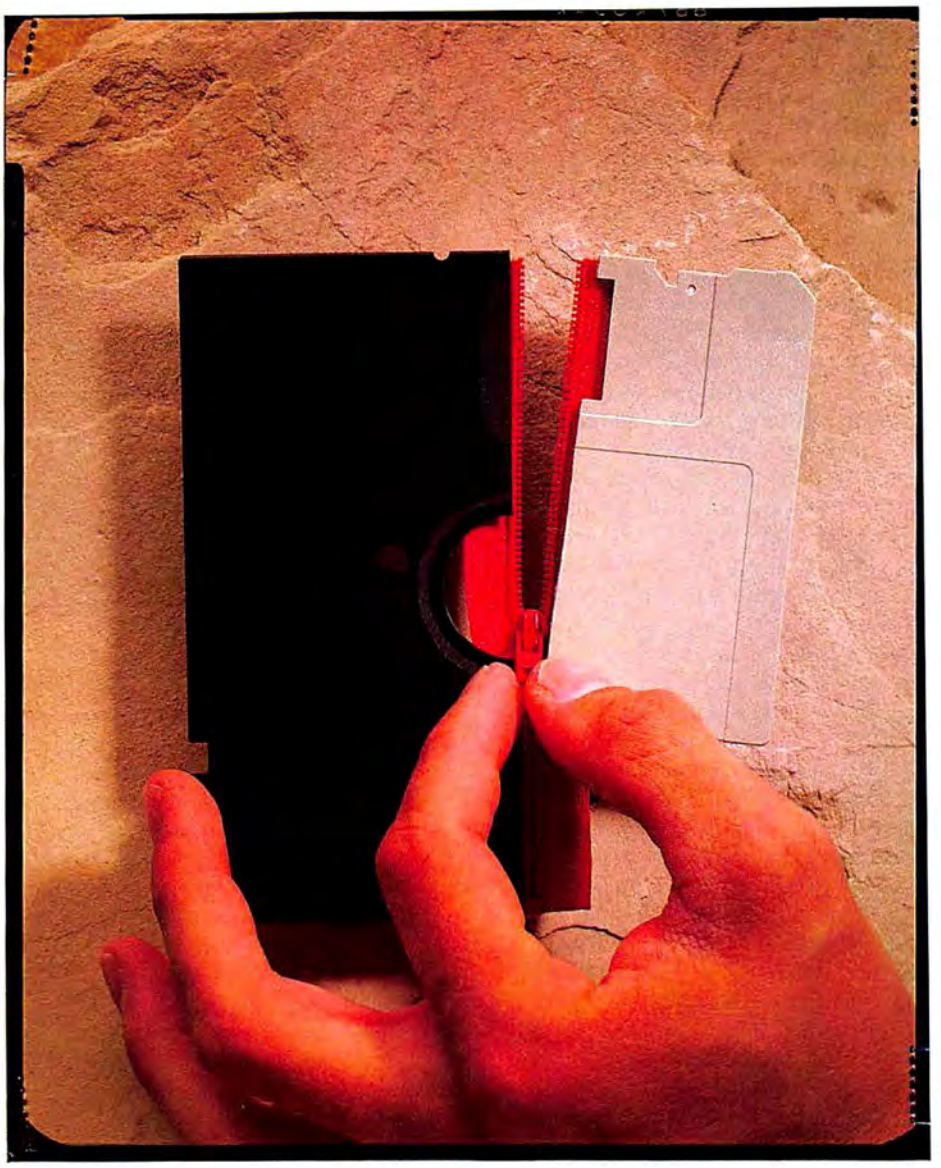




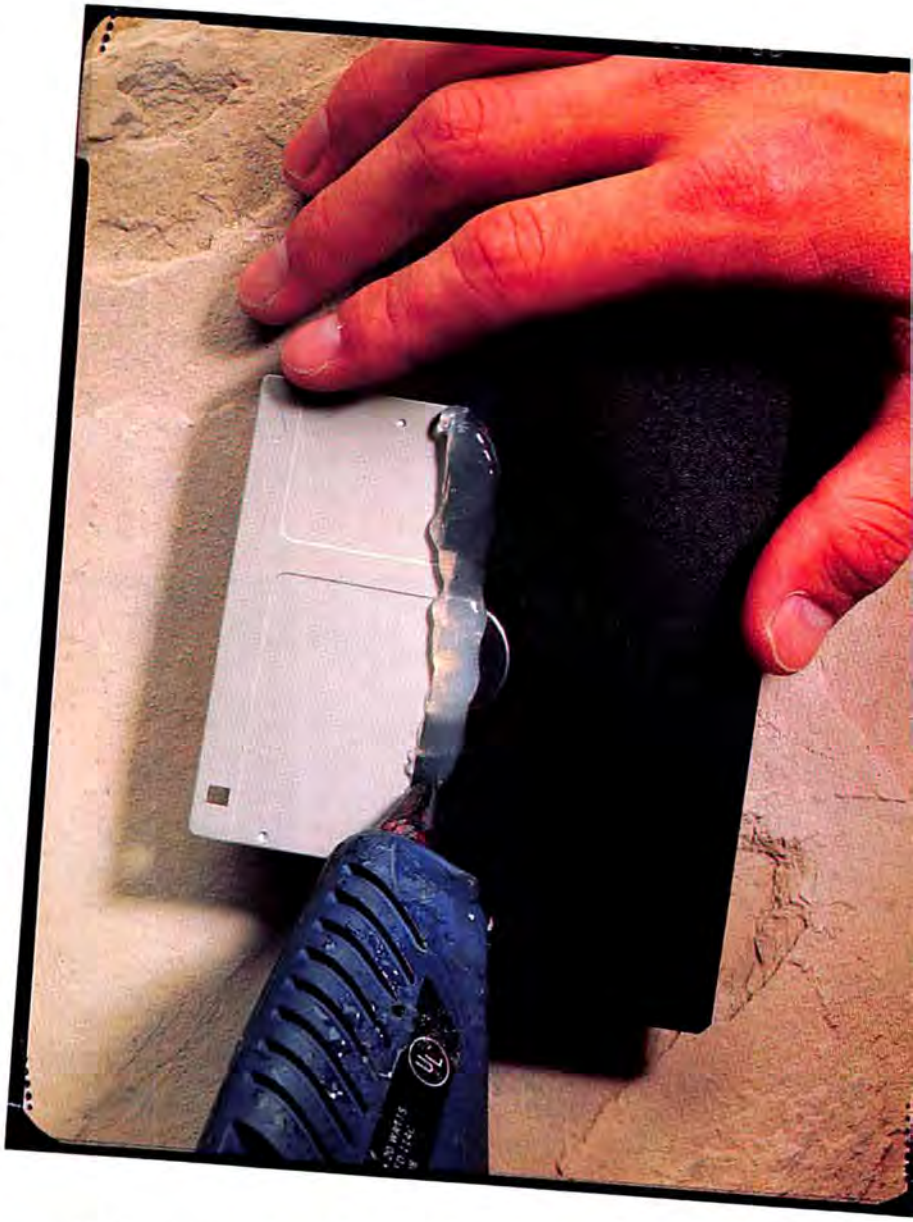
An in-depth look at bridging the gap between Big Blue and the Rainbow.

Corporate resistance to Macs initially was stiff. And for good reason. The original 128K Mac just didn't have the power that business users needed; the software wasn't ready to do the job. Even after more powerful machines shipped and the software base grew both in size and quality, business had too great an investment in MS-DOS hardware, applications, and data to make a quick switch. Apple realized that if Macs wanted in, they were going to have to earn their place based not only on merit but also on their ability to share data with the installed base of PCs.





MEL LINDSTROM



So the Cupertinians took a new tack. They decided to encourage third parties to develop connectivity products. These efforts are snowballing. New products are coming onto the market faster than most of us can keep track of them. Apple has even dubbed 1988 the Year of Connectivity.

Users want to hook many different kinds of computers together. Also, many different networking schemes for connecting the various types of computers exist. To cover all the relevant topics in depth would require a book — or several of them. Because MS-DOS machines outnumber any other type of microcomputer and because the most common need is to get Macs and PCs talking to each other, we chose to focus this time around on point-to-point PC-to-Mac connectivity. In future issues, we'll look at networking, the Mac-to-VAX hook-up, and other related questions.

Sharing information involves making data generated by one program on one computer accessible and intelligible to another program on a different computer — in this case a Mac and a PC. To accomplish this goal, two interrelated problems must be solved.

First, there is the issue of physically moving the data, which is examined in "Connecting the DOS."

Then there is the more complex question of the data itself. Even if you move, say, a PC Word file to the Macintosh, you won't be able to read the data if MacWrite is the only word processor you have. "Gimme an A," by Steve Michel, examines the problems you're likely to encounter when moving alphanumeric data between Macs and PCs and describes the file filters and translators currently available.

"Switch Hitters," by Daniel Rosenbaum, looks at several programs that have been implemented on both the Mac and the PC (Word, PageMaker, WordPerfect, and Excel). And Richard Skrinde, in "Outfoxing dBASE," reviews FoxBASE+/Mac, a dBASE clone that can exchange data and programs with the PC version of dBASE III PLUS. One might think that sharing data between machines with these various programs would be transparently simple. But the experience of users is often more akin to fog.

Graphics are an even worse problem. While the trend discussed in "Switch Hitters" is growing, and new translation products are appearing to fill the void for other alphanumeric conversions, the variety of graphics file formats, especially on the PC, is overwhelming. Some powerful applications are available for converting among PC formats, or among Mac formats, but crossing the barrier between the two is still problematic. Steve Roth, in "Moving Pictures," takes a hard look at some products that smooth the path.

Finally, Steven Bobker tells us why he decided to buy a Toshiba T1000 MS-DOS laptop, rather than wait for Apple's laptop Mac, and how he uses it to phone home to the not-so-portable Mac he leaves behind when travelling.

In the next few years, we'll undoubtedly see an explosion in connectivity products. Crossing the great divide between MS-DOS and the Mac/OS should become easier and easier as better and faster bridges are built.

If we're really lucky, the dream of complete transparency between the two systems will come true sooner rather than later. In the meantime, here are some solutions you don't need to wait for.

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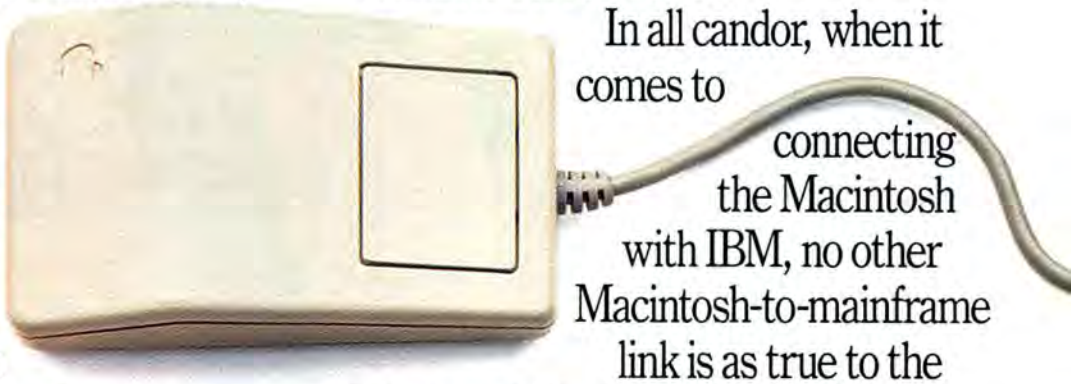
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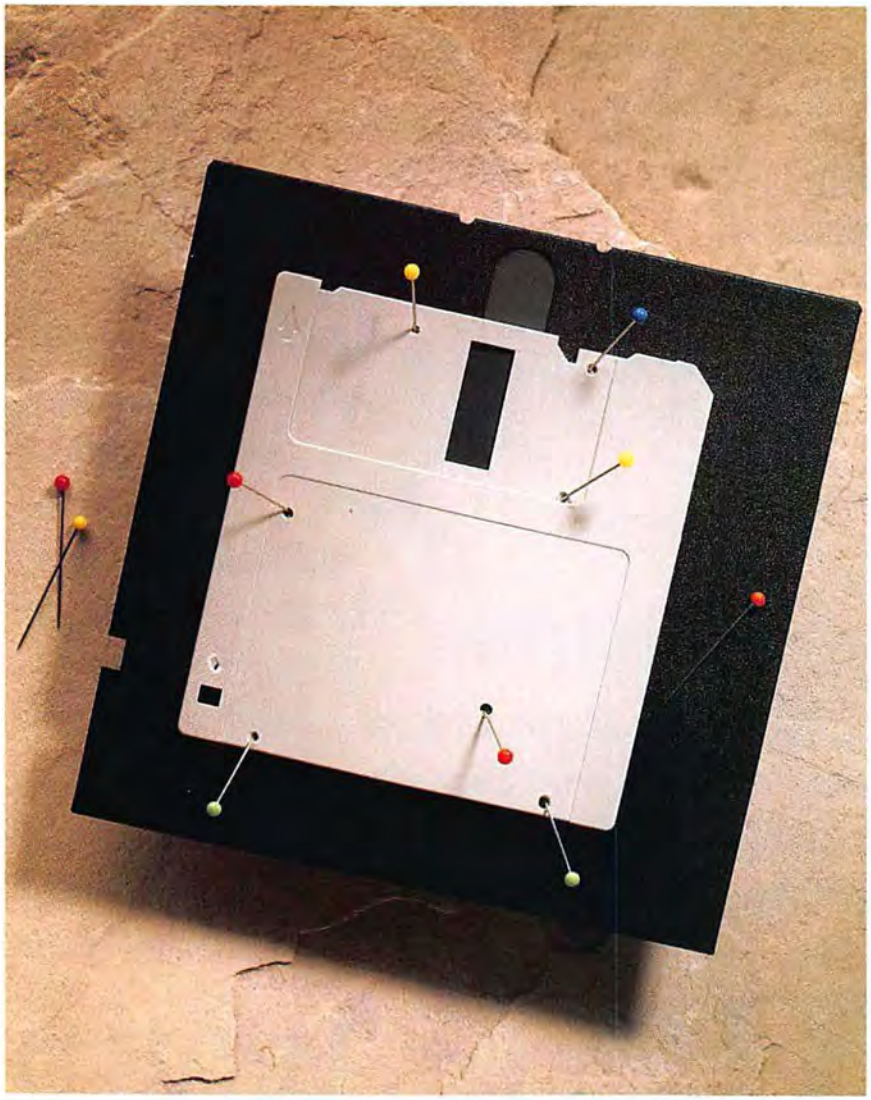
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Connecting the DOS

PC to Mac and back — child's play or wiring headache?



BY HENRY BORTMAN

Transferring information between PCs and Macs can be as simple as a child's puzzle. But the best solution for you to get data from point A to point B may not always be a straight line. How you go about shuffling information depends not only on your budget but also on the type of information involved.

There are three basic ways to move data between PCs and Macs: (1) direct connection (including modem connections); (2) external disk drives (Mac drives attached to the PC, PC drives attached to the Mac); and (3) network connections. There is also a fourth approach, DOS coprocessors that run on Macs, but this solution depends on one of the three previous approaches for sharing data between machines.

DIRECT CONNECTION

The simplest and cheapest connectivity solution is to get a serial cable, which you purchase or make yourself, and two telecommunications software packages, one for the Mac and one for the PC. If the machines can't be placed close enough for a direct connection, you can communicate between them with modems. Modems are, of course, more expensive than a cable. They're also slower. Direct wire connections can send data at speeds of up to 57,600 baud, while few people have modems that run faster than 2400 baud.

MacLink Plus

A number of companies sell Mac-to-PC cables bundled with software

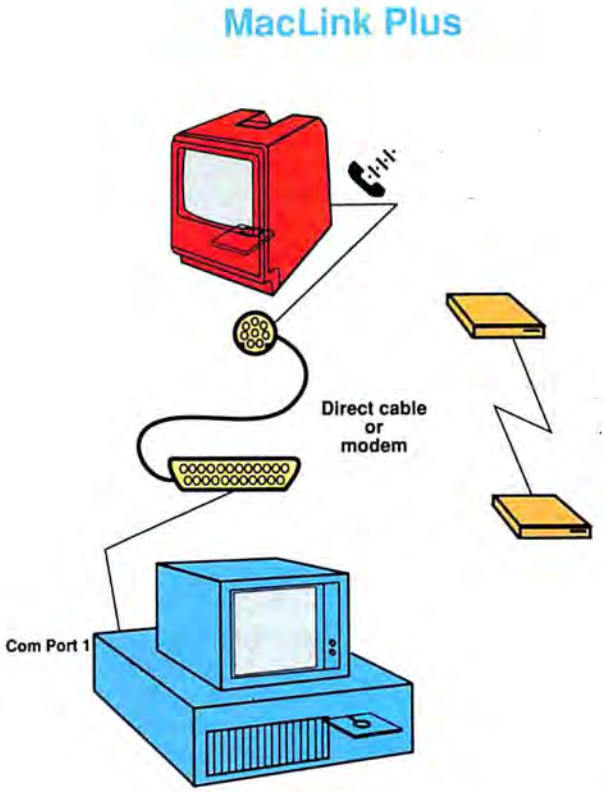
for making the transfer. Most of these are controlled from the Macintosh. The best of the lot — no question about it — is MacLink Plus, from DataViz. The complete package, which sells for $195, includes a serial cable, software for both the PC and the Mac, and a manual.

First the cable. Low marks here, gang. The cable you get won't work with Mac 512Ks — you have to send it back for a replacement. But more importantly, it doesn't function with ATs or PS/2 machines, either. For that, you'll need to find an adapter.

But the software — we looked at version 2.11 — is the best transfer and translation program available. In addition to providing very thorough control, it contains the most complete set of PC/Mac file-format translators around. In fact, both Dayna and TOPS license the MacLink Plus translator from DataViz for use in their products.

The MacLink Plus software comes on two disks, one for the PC and one for the Mac. The PC disk contains a batch file that automatically creates a DOS subdirectory and copies all the required files to it. To set up the PC for a transfer, you simply type MLPC at the DOS prompt. The rest is done on the Mac side.

The Mac software has four major functions, which you walk through in sequence. In Set Mode, you choose one of four transfer styles. Most users will choose either MacLink Mode, for PC-to-Mac transfers, or Local Desktop Mode, for translating files that have already been transferred to the Mac.

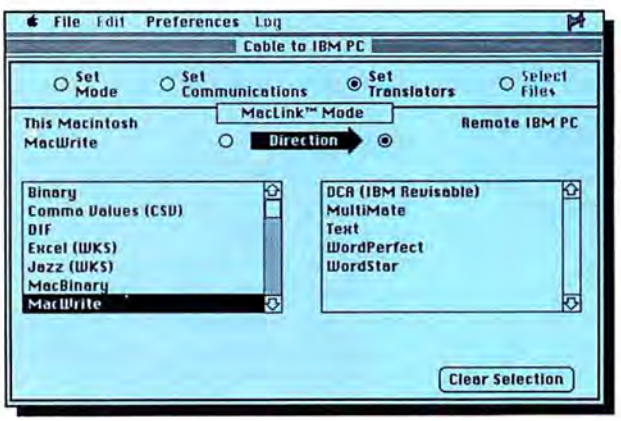


Set Communications selects the type of computer with which you're connecting. The choice is between a PC and another Mac, but DataViz sells other products that allow you to connect to Wang or NBI word-processing systems as well. You also choose between direct and modem connections and set your baud rate. The program includes software for controlling a modem connection. For direct connections, MacLink Plus supports speeds up to 57,600 baud.

The Set Translators function defines those formats you want to convert. DataViz assumes that you know what types of file formats you want to translate, so you select formats first, then files. You choose which direction you want to go, then select a pair of file formats, one on each side.

The final step is to Select Files. Only those files that meet the criteria selected in Set Translators are displayed in Select Files. This function is slightly misnamed because, unfortunately, you can select only a single file at a time. This is one of the few shortcomings of MacLink Plus.

One of the most significant features of the MacLink Plus translators is that DataViz has implemented them in Apple File Exchange format as well. The AFE-compatible translators come as part of the MacLink Plus package or can be purchased separately for $159. (For more on MacLink Plus, see "Gimme an A" in this issue.)

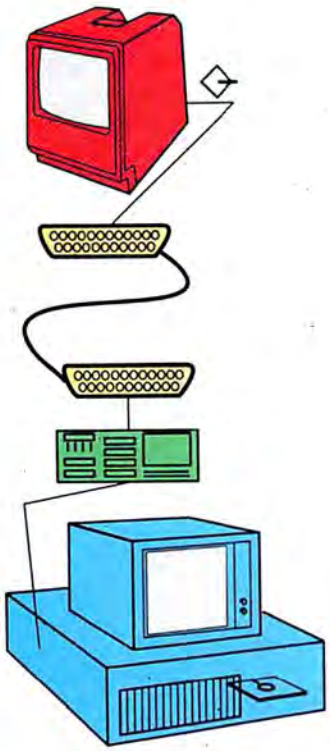


MacLink Plus, in addition to providing full telecommunications control between PCs and Macs, offers the most complete set of file-format translators available. It's a must for anyone who regularly shares data between operating systems.

QuickShare

QuickShare, from Compatible Systems, uses a SCSI connection to transfer files between PCs and Macs. But, you protest, PCs don't have SCSI

QuickShare



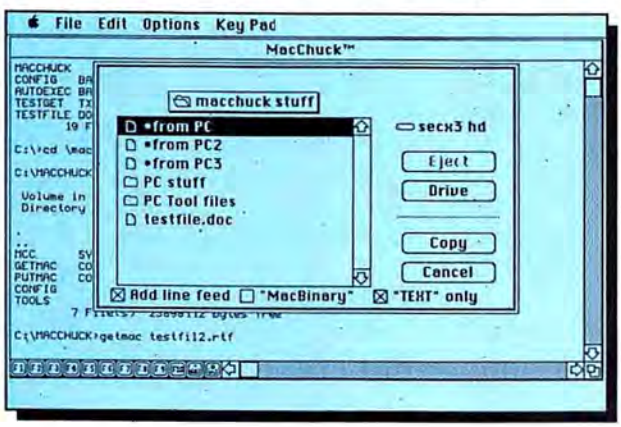
ports. True, and that's why the QuickShare package contains a PC card that provides one. Sorry, no support yet for microchannel machines. Compatible Systems also provides a 10-foot SCSI cable and a terminator, which you insert between the cable and the PC card.

The card is preset for a SCSI ID of 6, and the manual cautions you to make sure no other device on the SCSI bus is already set to 6. We tried to check this with the handy SCSI BUS 4 cdev and corrupted the System file on an SE internal 40-megabyte hard disk. Twice. We didn't experiment a third time. We don't know whose fault it is, and we're not blaming Compatible Systems (although we're not absolving them either). We're just warning you.

QuickShare's main function is to enable you to use a portion of a PC's hard disk as a virtual Macintosh hard disk. The QSINST program included on the 5.25-inch disk that comes with QuickShare prompts you through the required steps. You then type QUICKSHR at the DOS prompt, reboot your Mac, and — *voilà!* — the QuickShare hard disk icon appears on your Mac. You can even copy System software to it and boot your Mac from the PC! (We still haven't figured out why anyone would want to do this, but we can't help being impressed.)

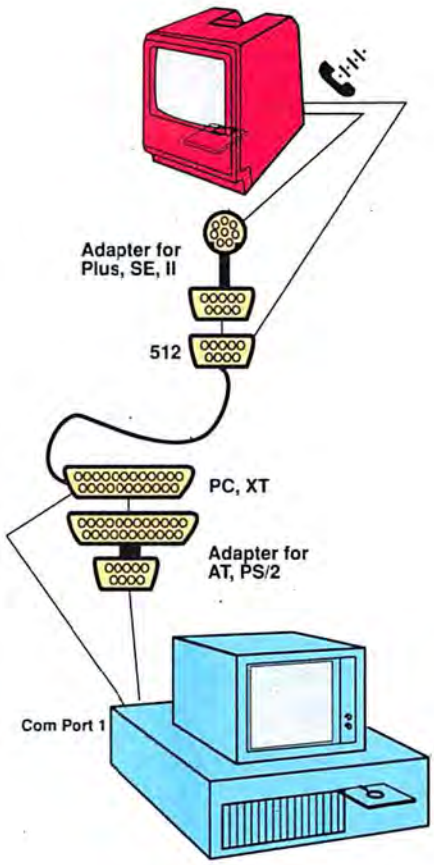
Not surprisingly, if you don't run the QUICKSHR program on the PC before you boot the Mac, the Mac won't be able to access the PC's virtual hard disk. More annoying, when the QuickShare cable is connected, the PC must be turned on before you turn on the Mac or the Mac won't boot. That holds true even if you don't want to access the virtual hard disk.

For file transfer, QuickShare's SCSI connection is fast. But don't make the mistake of thinking that, because part of your PC hard disk is being used as a virtual Mac disk, its MS-DOS files will somehow magically appear on the Mac's desktop as well. They don't. For that you must use the standalone PC Transfer application that comes with QuickShare. This program, which has an interface similar to that of Font/DA Mover, lets you transfer multiple files in either direction. No translators are provided.



MacChuck, while not a DOS coprocessor, allows control of a PC from the Mac. The GETMAC and PUTMAC utilities are used to transfer files from and to a Macintosh disk, respectively.

MacChuck



At $465, it's a rather expensive way to go if all you want to do is get data from here to there. But if you're wondering what to do with those old XTs now that you've got ATs and PS/2's, or if you have some spare hard-disk capacity on your MS-DOS machine that the Mac could profit from, QuickShare offers a unique solution.

MacChuck

Then there's MacChuck, from Vano Associates, which takes yet another approach. With MacChuck, you string a serial cable between the modem port of the Mac and the PC's COM1: port, as usual. The cable is a 9-pin to 25-pin, but it comes with two adapters, one for each end. The adapter for the PC end of the cable (which

goes from a 25-pin plug to a 9-pin socket) is the real gem. Users of DOS machines will understand why.

MacChuck's approach is novel. Rather than just sending files across the wire, it sends the PC's screen image over to the Mac — *and allows the user to control it from a window on the Mac screen.* The Mac's keyboard becomes a piggyback PC keyboard.

This is the main advantage of MacChuck over other solutions in the same general category. Not only can you move files back and forth, but you can actually control PC software from the Macintosh. Some software. It has to be completely text-based. Applications such as Microsoft Word (the PC version) send MacChuck into graphics mode. All you see is a gray screen and you can't do anything. However, for the applications that it does support, you get limited cut-and-paste capability, since the Mac's menus are active, as are DAs.

File transfer per se is, however, a bit problematic. You're supposed to be able to use the standard DOS COPY command, addressing the Mac as the MAC: device. We could never get it to work. Two other programs that come with MacChuck, GETMAC and PUTMAC, can be used from the DOS prompt to transfer files from Mac to PC and from PC to Mac, respectively. These worked more successfully, but having to choose a different program depending on which direction you're transferring data doesn't rate high marks in our ease-of-use column. And MacChuck offers only limited file conversion/translation capability.

This is not a product we would choose, although we hear reports that a number of people are very pleased with it. At $79.95 it's certainly worth checking out yourself.

LapLink Mac

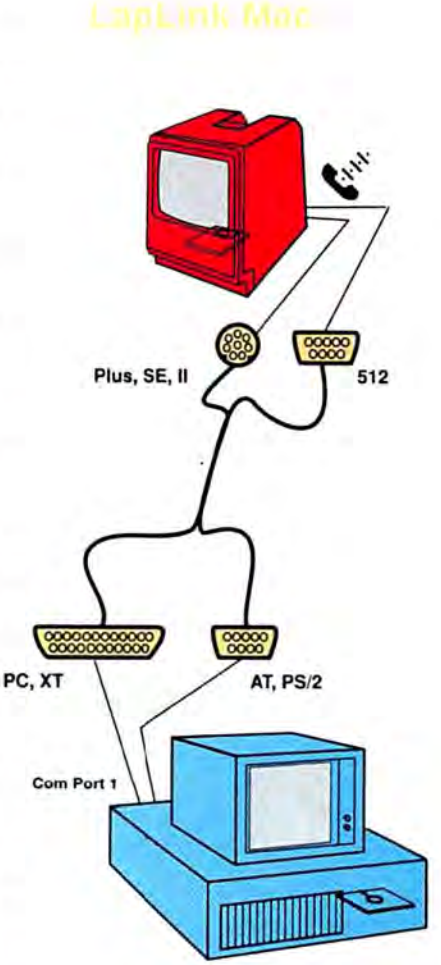
The last entry in this category, LapLink Mac from Traveling Software, is controlled from the PC rather than from the Mac. Nevertheless, its interface is very well done, and the program is easy to use. To install it, you string the by-now-familiar serial cable from modem port to COM1: — but Traveling Software's cable is the best of the bunch. Come on, you say, it's just a cable. But you wouldn't say that if all you had was the DataViz cable and an AT. You'd be cursing. The cable that comes with LapLink Mac has two connectors on each end: on the Mac side, a DIN-8 for Plus, SE, and II users and a DB-9 for 512KE users; on the PC side, a DB-25 for PCs and XTs and a DB-9 for ATs and PS/2's.

Once the cable is in place, you install one file on the Mac and one on the PC (one is such a refreshing number); type LLMAC at the DOS prompt and double-click on the LapLink Mac icon on the Macintosh. You're up and running.

The software is menu-driven; menu items are selected with single keystrokes. On the left side of the screen, you see an MS-DOS directory; on the right, a Macintosh directory. The cursor keys help you navigate these directory structures. And there is ample online help.

It's possible to copy multiple files at once, but you must select them by "tagging" them from within the Group function. A little clunky, but it works. File conversion is limited to stripping out or inserting line feeds and to converting files to straight ASCII by removing formatting control codes.

My pick in this category: MacLink Plus — but let's hope DataViz does something about the cable. (Let's see, where did that MacChuck adapter go?) If you'd rather work from an MS-DOS machine, LapLink Mac is what you want.





LapLink Mac displays a DOS directory on the left half and a Macintosh directory on the right half of the screen. Single-keystroke menu commands control its file-copying functions.

EXTERNAL DISK DRIVES

If you can't place a PC and a Mac close enough to connect them directly, and if telecommunicating via modems

is either too expensive or too slow for your needs, then consider an external disk drive. The idea here is to attach a PC disk drive to a Mac — three of the products we looked at take this route — or vice versa.

You might think that Apple's PC 5.25 Drive would be the place to start in this category. But Dayna did a better job. The DaynaFile costs more — between $650 and $1,000, depending on the configuration you choose — but it is implemented with brilliance and with a more Mac-like interface than can be found in the Apple product.

DaynaFile

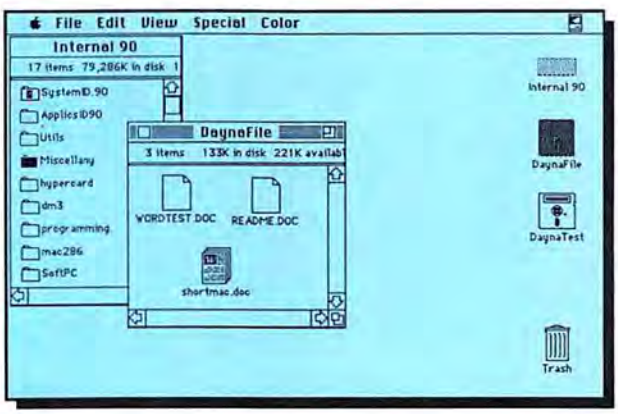
The DaynaFile connects to the Mac's SCSI port, which makes it easy to move the drive from one machine to another. To use it, just plug it in, drag the DaynaFile device driver into your System folder, and reboot. Pop a PC disk into the drive, wait a few seconds and — presto! — a PC disk icon appears on the Finder's desktop. The beauty is that it acts exactly like any other Macintosh disk. The DaynaFile driver reads the DOS directory structure and creates a Finder-accessible substitute, which it then writes back to the disk. From then on, as far as the Mac is concerned, it's folder time. Copying files from one machine's disk to another is just a familiar drag of the mouse. You can even initialize a DOS disk from the Finder's Special menu.

MacLink Plus Translators for DaynaFile is available from DataViz, for $125, but it does not include the communications portion of MacLink Plus and won't work with AFE.

In the latest release of the software, version 2.1, Dayna added a powerful new feature, which they call "extension mapping." DOS files usually have an eight-character name, followed by a three-character extension; the two parts are separated by a period. Many DOS applications use a specific extension (PC PageMaker, for instance, uses .PUB) to identify their files. Extension mapping enables you to specify a Macintosh type and creator for any extension.

This will allow files residing on or copied from PC disks to appear with Macintosh icons that will launch Mac applications when double-clicked. Not bad, huh?

You have to be a little careful how you apply this feature. If, for example, you map the .DOC extension to the type and creator for Word, you'll be able to launch Word by clicking on a PC Word file — but the formatting won't work right because PC and Mac Word files aren't completely compati-



DaynaFile extends the look and feel of the Mac to PC disks, allowing them to appear on the Mac's desktop as if they were Macintosh disks. Copying and deleting files, creating directories, and even initialization all can be done with familiar Macintosh clicks and drags.

DOS Boot

DOS coprocessors that run on the Macintosh are an unlikely choice for anyone who simply wants to share data files between PCs and Macs. This is not by any means their main calling in life. In fact, without using either a direct connection, an external disk drive, or a network as an accessory, coprocessors don't provide much of a solution at all for file transfer. But because they are an important part of the DOS-to-Mac/OS picture, we will examine them briefly to see what they do offer in this area.

Mac286: AST's long-awaited Mac286 is a NuBus implementation of an IBM PC AT compatible. It comes on two NuBus cards, which must be installed in adjacent Mac II slots. One card contains a connector to which an Apple PC 5.25 Drive can be attached. The drive was required hardware for the initial release of Mac286. Version 1.01, which shipped at press time, eliminates this dependency.

The Mac286 application is launched from the Macintosh, but you must have the DOS system disk in the 5.25-inch drive when you start up — at least the first time — or DOS will not be able to boot. Your first task is to create a virtual DOS hard disk (the C: drive) on a portion of your Macintosh hard disk, which the manual guides you through smoothly. AST has implemented the virtual disk in an unusual way. While you specify a maximum size for the virtual disk, only a portion of it is used initially; it grows as you add more files to it. This saves disk space but, as the manual cautions, can cause DOS errors later if your Macintosh files spill over into the space that DOS thinks should be available for its use.

Since Mac286 requires that a 5.25-inch drive be connected, copying from this A: drive is the most likely way of moving applications and already-existing data files to the DOS virtual hard disk. You can copy DOS files from either the A: or C: (virtual DOS) drive to the Mac, which is addressed as the D: drive.

Copying in the reverse direction is also possible. But, unfortunately, Mac286 can't handle Macintosh file or folder names that do not conform to DOS standards. If you want to transfer in this direction, you will have to restrict your Mac filenames to eight characters plus a three-character extension, with none of that Macintosh funny stuff, like spaces, in them.

SoftPC: "Synthetic hardware" is what Insignia Solutions calls SoftPC, their software emulation of an IBM PC XT. You don't see any hardware because there isn't any. The whole deal comes on four disks. Six, actually, but you use only four of them. Which four depends on whether you install the 2-megabyte or the 4-megabyte version. SoftPC will typically be used on a Mac II, but it also can be installed on an accelerated SE with at least 2 megabytes of memory. The installation procedure is

simple, and you are prompted through it. A virtual C: drive with DOS already installed is created on your Mac hard disk during the process.

Creating and properly formatting a second virtual disk (drive D:) is a more confusing prospect — at least it was for this semi-DOS-literate user. And even after I got it working, I had a lot of trouble keeping the right drive letter pointing at the right file on the Mac hard disk so that directories appeared when I expected them.

Logical drive E: is used to point to files stored on regular Macintosh-formatted floppies and hard disks. At any given time, you can point drive E: at any single folder on any one disk and access the files contained therein. A menu is used to select the folder drive E: points to.

SoftPC has three ways of loading DOS applications and data files onto its virtual C: and D: drives on the Mac. (1) It supports Apple's PC 5.25 Drive, which it addresses as drive A: (the DaynaFile is not supported). (2) Drive E: allows it to access DOS files that previously have been copied to the Macintosh. SoftPC also uses drive E: to address a DaynaFile, AppleShare servers, or TOPS volumes — anything that the Finder supports. (3) Using the SlavePC program provided by Insignia and a serial connection between the Mac and an MS-DOS machine, SoftPC can control the A: drive of the attached machine as if it were its own. Insignia provides only the pinouts for the cable needed for this approach, not the cable itself.

All this is rather circuitous for our taste. We also had an unpleasant experience trying to run XyWrite under SoftPC. We couldn't. The screen seemed to have a mind of its own and paid no attention whatsoever to our feeble attempts to control it. But we should point out that we made no attempt at exhaustive testing. SoftPC is supposed to do a great job with Flight Simulator.

At $595 SoftPC is certainly a cost-effective alternative to the Mac286, which sells for nearly three times as much.

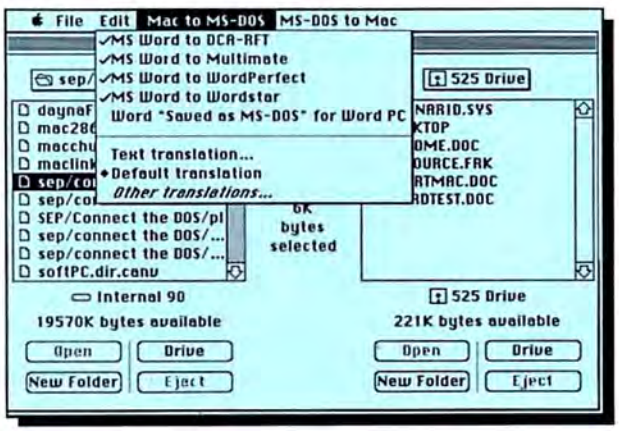
Mac+PC SE: This coprocessor, from Perfect Tech, is one of a family of three. We did not see the Macintosh Plus or Macintosh II versions. In fact, we can't really say we saw the SE version, either.

After several unsuccessful attempts to boot DOS — we're talking system crash, here — we finally got it up and running. But then we were unable to transfer files from either the DaynaFile or the Infinity MS without crashing again. Both of these drives are supposedly supported. More crashes were waiting for us when we tried using the supplied serial cable and PerfectLink software. It was about at this point that we decided, despite our California location, not to encourage our readers to share this experience.

ble. Another caution: Extension mapping changes don't take effect until you reboot. It's easy to miss this point in the manual.

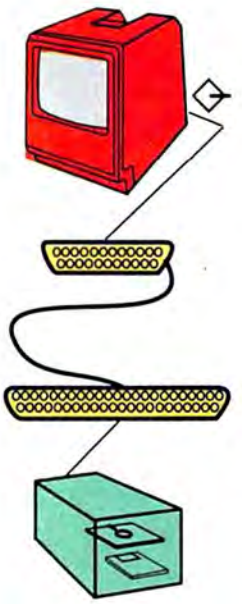
The DaynaFile comes in several configurations. You can get either one or two drives. Both 5.25-inch and 3.5-inch drives are available (the 3.5-inch drives do not read Mac disks, they read 3.5-inch DOS disks). The 5.25-inch drives can be either 360K or 1.2-megabytes and the 3.5-inch drives can be either 720K or 1.44 megabytes. The two-drive units come in various combinations. (And, yes, in case you're wondering, with the two-drive units you can copy files from one PC disk to the other by dragging their icons with the mouse.)

Last point: The DaynaFile's external power supply is almost as large as the disk drive itself. Yuck.



Files on disks mounted on Apple's PC 5.25 Drive are transferred to the Macintosh with Apple File Exchange and can be simultaneously translated to a different format. AFE is "expandable"; new translators are added by dragging them into the same folder as the application.

DaynaFile Drive



PC 5.25 Drive

The features of Apple's PC 5.25 Drive pale by comparison. It works with the SE or the Mac II only, because it requires an add-on card to drive it. And by the time the shooting is done, it's not all that much cheaper: $399 for the drive and $129 for the card. If you install a PC Drive 5.25 card in your SE, add a few more dollars for installation and you can kiss your expansion slot goodbye. If you install it yourself, you can kiss your warranty goodbye too.

Installing the card, however, doesn't give you immediate access to DOS files. Its interface is not transparent like that of the DaynaFile. Given all the hoopla about graphic interfaces,

Apple PC 5.25 Drive



ease of use, and the rest, it seems like a logical way to go. Maybe Apple couldn't bear the thought of having a PC disk appear on the desktop next to a Mac disk.

Hmm . . . , I wonder if they'll sue Dayna for violating the Macintosh's look and feel.

Anyway, what they really should have done was go Dayna one better. They should not only have had PC disks appear on the desktop but they also should have written software that would ask you if you wanted to do a translation when you dragged a file icon from one disk to another. The dialog could go something like this: "You are copying a Macintosh file to a PC disk. Would you like to perform a file translation?"

Instead, to use the PC 5.25 Drive you have to use Apple File Exchange. Curiously, this ships not with the drive but as part of the Macintosh System software (version 5.0 and later). The manual that comes with the drive barely mentions Apple File Exchange, referring to it only long enough to tell you to make sure your dealer gives you the Macintosh Utilities disk and its accompanying manual, wherein AFE's workings are detailed. Of course, by the time you get home and read the manual, being told what you should have also gotten is not much help. (Contest: How fast can you find your Utilities disk? And the manual?) This approach is too splintered. Apple should have sprung for the extra disk and manual inside the box with the drive.

As for AFE's features, its workings are discussed in "Gimme An A" elsewhere in this issue — but here's a short rundown. It is designed to move files not only between PC and Macintosh computers but also between Apple IIGS machines running PRO-DOS and either MS-DOS or Mac/OS as well. It includes only a single translator, DCA/RTF to MacWrite (and the reverse). But it is easily extensible. Any software vendor can write an AFE translator that can be incorporated into AFE simply by dragging it into

Reach Out and Touch Some DOS

As we went to press, Novell announced a fall release date for NetWare for Macintosh. This latest entry in the Mac-PC connectivity market will give Mac users access to the world's largest installed base of networked PCs.

Needless to say, Apple is enthusiastic about NetWare Mac. NetWare is the AppleTalk of the PC world. More than 220,000 NetWare servers currently exist, supporting 2 million users, and it's the network of choice in corporate PC communications. Thus, Novell's adoption of the AppleTalk Filing Protocol for its Macintosh product should further enhance the Mac's marketability as a business machine.

Novell says NetWare Mac will be fully compatible with both AppleTalk and AppleShare, providing a "transparent" connection between Macs and PCs. When a NetWare server is connected to AppleTalk, you'll see it as a standard AppleShare server. DOS files will be shown in the Mac's HFS format, and the folder/file access privileges familiar to AppleShare users won't change. Mac and PC users will have full access to each other's files and data, and no conversion will be necessary for applications that share file formats, such as Excel and WordPerfect. In addition, 18 software companies — Aldus, Ashton-Tate, and Lotus among them — have agreed to provide product support for NetWare Mac and NetWare 2.15.

Printing should be a snap, since NetWare Mac will allow Mac and PC users to share access to Apple's new LaserWriters, as well as to third-party printers that use AppleTalk. If you'd rather spool it, the network supports the AppleTalk Printer Access Protocol.

Not only will NetWare be Mac compatible, it will make the Mac fully NetWare compatible. Novell's Open Protocol Technology will enable Macs to talk to PCs that use a variety of operating systems, including DOS, Windows/386, and OS/2, and to larger computers like VAX systems and IBM mainframes. Gateways and remote bridges could extend the network even farther. Future versions of NetWare Mac might connect the Mac to networks such as Token Ring and Arcnet and might provide E-mail services for chatting with PC users as well as folks on systems such as IBM Profs and DISOSS. Mac users will also benefit from NetWare's 2 gigabytes of maximum disk storage and its data-protection schemes, which include redundant directories, read-after-write verification, and mirrored drives.

NetWare Mac's initial release will support LocalTalk and EtherTalk. You can install the software on either a NetWare file server or an external bridge. For small, cost-conscious networks, a dedicated file server is probably the best bet. Larger installations may find a bridge more efficient than installing NetWare on each server.

To tap into an existing NetWare setup, you will need a copy of Netware for Macintosh ($200) and the appropriate LocalTalk adapter, available from Novell this fall. The LocalTalk NL1000 ($250) works with the AT bus; the LocalTalk NL/2 ($350) supports the Micro Channel. The software is not copy-protected, and you have to buy only one copy per site. NetWare Mac will only work with version 2.15 of NetWare, also scheduled to ship this fall. Owners of versions 2.1 and up can upgrade for $200 per file server; new users will have to pay $1,395 to $4,695, depending on how many bells and whistles they want.

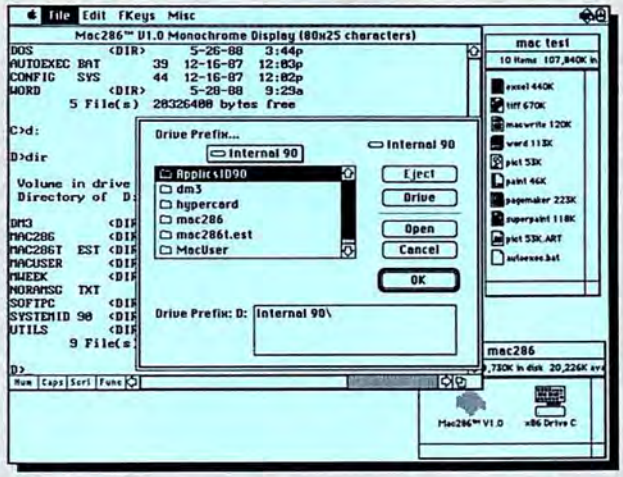
If NetWare for Macintosh lives up to its press, it could become the definitive

the same folder as the application. Apple is leaving the task of writing additional translators to third parties.

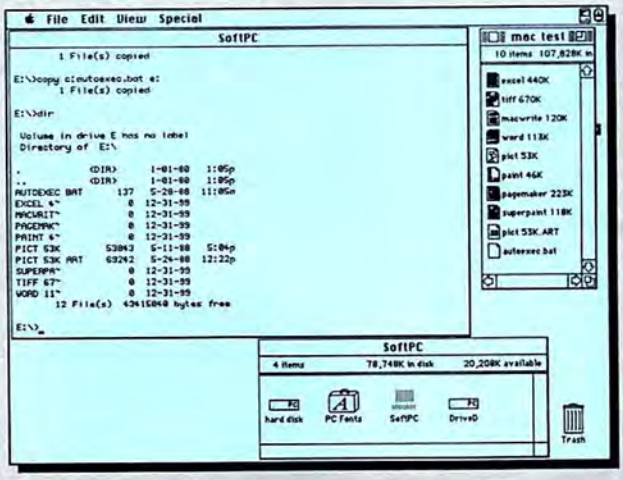
While AFE is designed to work with Apple's PC 5.25 Drive, and does so automatically, it can also be used as a standalone to translate files that have already been transferred to the Macintosh.

While it's generally a dependable program, we did get it to crash, and rather dramatically. We weren't even trying very hard. Unfortunately, since we can't animate the printed page, we can't show you all the neat screen effects that accompanied the crash, but it was spectacular.

Users expect more from Apple. They're supposed to be the interface masters. They publish manuals telling people how to conform to interface. They hold up the Finder as Apple's gift to computing mankind. They sue people who even come close to copying it. It's not my fault they decided to abandon it, as well as Mac 512K and Plus owners, with their PC drive.



The Mac286 D: drive is used to access regular Macintosh files from within its DOS-in-a-Mac environment. File and folder names that don't conform to DOS cannot be "seen" by Mac286.

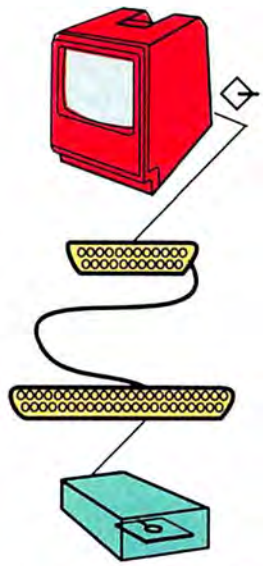


SoftPC can create multiple "virtual" DOS drives, using portions of a Mac II's hard disk. Logical drive E: is used to access true Macintosh files.

network not only for Mac-PC connections but for Mac-everything. For more information, contact Novell at 122 East 1700 South, Provo, UT 84601; (801) 379-5900. You can also connect to the Novell demo Bulletin Board System (BDS) at (800) 444-4472 using NVSOF4 as the access code. The BBS is set up to work with 8 bits, no parity, 1 stop bit, and 1200 baud.

— Aileen Abernathy

Infinity



Peripheral Land's Infinity MS drive is designed primarily to use specially formatted 5.25-inch disks as 10-megabyte removable Macintosh "hard disks." The Infinity connects to the Macintosh through the SCSI port. When used in its normal mode, the removable 10-megabyte disks appear on the desktop just like any other Mac disk.

What makes the Infinity MS notable is that, using the standalone MSD->MAC application that comes with the drive, it can also read MS-DOS 360K and 1.2-megabyte 5.25-inch disks. But since the drive expects to see 10-megabyte removable disks, if you don't start up the MSD->MAC program within a few seconds after you insert a PC disk into the drive, you get a "This is not a Macintosh disk" message. We could think of a smoother approach.

No translators are bundled with the drive, but it is compatible with MacLink Plus.

We didn't have the greatest luck

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ALSoft
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Font/DA Juggler Plus *(w/sound utility)* . . . . 32.
Altsys
FONTastic Plus 2.0 *(advanced font editor)* 54.
Fontographer *(LaserWriter font editor)* . . . 239.
Ars Nova
Practica Musica . . . . . 79.

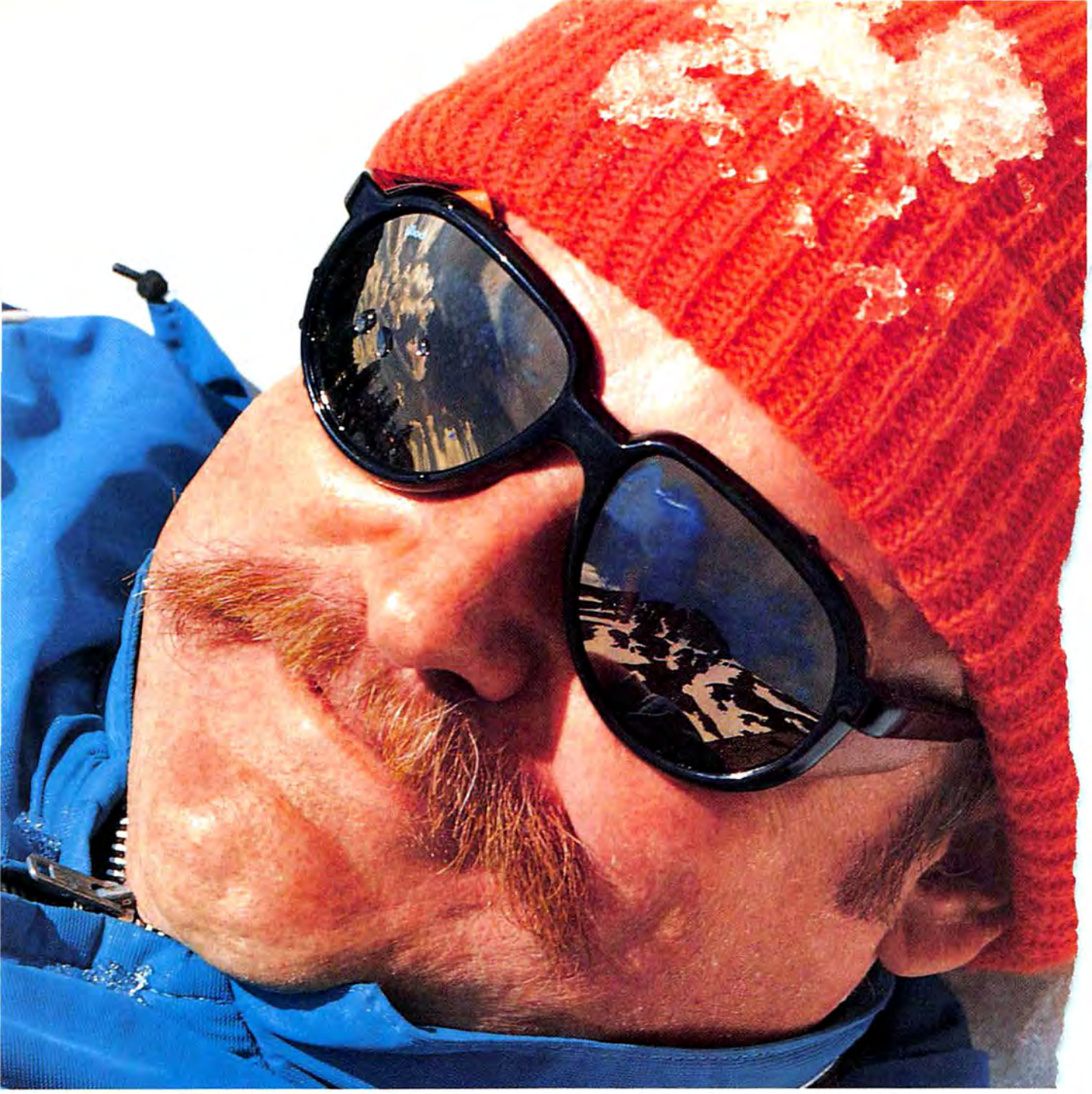


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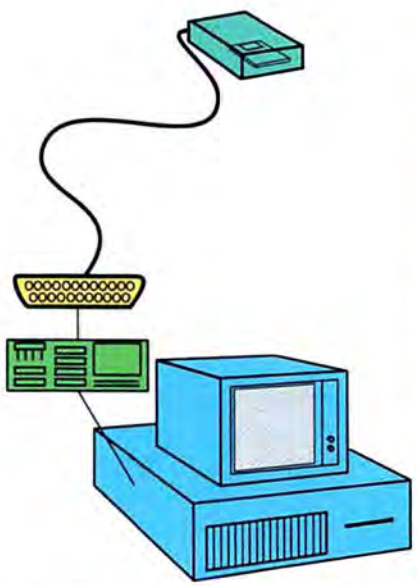
with the Infinity. The first unit we received didn't work at all. The second one worked but had trouble reading one of our PC disks — although the Compaq 386 we used for testing could read it without any problem. It turned out that the DaynaFile, where that disk had also spent some time, had created a special file for use by the Finder. Not only was the Infinity MS unable to read this file, but it also consistently crashed the Mac (sometimes an ID=06 error, sometimes an ID=11).

Since we were not really looking at removable disk drives, we didn't test how well the Infinity performed its main function. But at $1,295, we don't recommend it as a solution for PC/Mac file transfer.

MatchMaker

Finally, there is the MatchMaker, from Micro Solutions. This $149 package contains an add-on card for the PC and software that lets you attach a Macintosh 3.5-inch disk drive to a DOS machine. Of course you have to have a spare 3.5-inch drive; if you don't, you should figure on adding another $200 or more to the total cost of this solution.

Installing MatchMaker requires opening up the PC case and shoving the card into the slot. If you've done this before, you won't have any trouble. If you haven't, the manual won't offer much help.



Running the RAM-resident Mac program from the DOS prompt makes MatchMaker's special DOS-like commands available for copying files to and from the Mac disk drive. As the manual says, "You'll find copying information to and from Macintosh diskettes just about as easy as working with your DOS diskettes." The letter M: is used to specify the Mac drive. MDIR is used to get a directory listing of the M: drive; MCD moves you up and down the HFS directory structure; MCOPY copies files to and from the drive, etc. The manual includes a very good discussion of HFS, and the software allows you to use full-length Macintosh file and folder names, even those with spaces in them, when specifying files on the M: drive.

If we were DOS users, we might prefer this solution to hanging a 5.25-inch drive off a Mac. It would give us more control over file transfers, since they would be done at our machines instead of someone else's Mac. Bear in mind, however, that MatchMaker offers only a minimal solution to the translation problem — a program, MAC2TEXT.EXE, which converts MacWrite files to ASCII.

NETWORKS

Although Apple brought AppleTalk (the cables) to market early in the evolution of the Mac, initially only part of the AppleTalk network protocols were implemented — just enough to allow Macs (and later PCs) to share printers. It wasn't until January 1987 that AppleShare became available, allowing users to share files as well. It was only this January that Apple extended

Home-Wiring

If you want to send files between a Mac and a PC that live in the same office, but you don't have a network or an external disk drive and don't want to buy one of the existing packages for serial communication, you'll need two things: telecommunications software (a separate program on each end) and the right serial cable. You could use modems, but you can achieve transfer speeds up to 40 times faster using a direct connection.

Several good telecomm packages are available commercially for both the Mac and the PC, and you can probably find good shareware or freeware if you hunt around a bit. Make sure the software works for controlling both modem-to-modem and direct connections. Most packages do.

The "right" serial cable is *not* the one that you use for your modem (if you have one). For direct connections, you need to use what is called a "null modem," a specially wired cable.

Both straight modem and null modem cables are based on the RS-232 (or RS-422) standard for serial communications. Unfortunately, these are among the most-abused "standards" in the computer industry. RS-232 cables are supposed to have 25-pin connectors (DB-25) at each end; RS-422 uses 9-pin connectors (DB-9). Each pin in the standard is assigned a specific function.

In practice, only a few of the pins are used because not all of them are needed for successful telecommunications. To save space, a number of computer manufacturers have decided to use connectors with fewer pins. On the early Macs (128K and 512K), the serial (modem and printer) ports used 9-pin connectors. But on the Plus, SE, and Mac II, Apple switched to 8-pin circular (DIN-8, or as it is sometimes called, Mini-8) connectors. IBM PCs and XTs and their clones all use the standard DB-25 connectors, but ATs and PS/2 machines use DB-9s.

If you want to connect a DOS machine directly to a Mac, you need to make sure that: (1) you get or make a cable with the right connectors on each end; and (2) the connectors are correctly wired. Below are the correct pinouts for connecting all the various combinations of Macs and PCs, ATs, and PS/2's. You can use them either as a guide to building your own cable or to check out the wiring of a cable that you are not sure is right for the job.

If you plan to build your own cable, we should caution you that it is extremely difficult to solder a DIN-8 connector. Some stores sell DIN-8's wired to a short length of cable that is bare on the other end. Try to get one with a long piece of cable on it.

its AppleShare products to include support for PCs.

Tangent Technologies, however, has been shipping AppleShare-compatible TangentShare products for a while. And even before AppleShare was available, TOPS — which is not compatible with the AppleTalk Filing Protocols (AFP) used by AppleShare — offered a way to fill the network void.

AppleShare

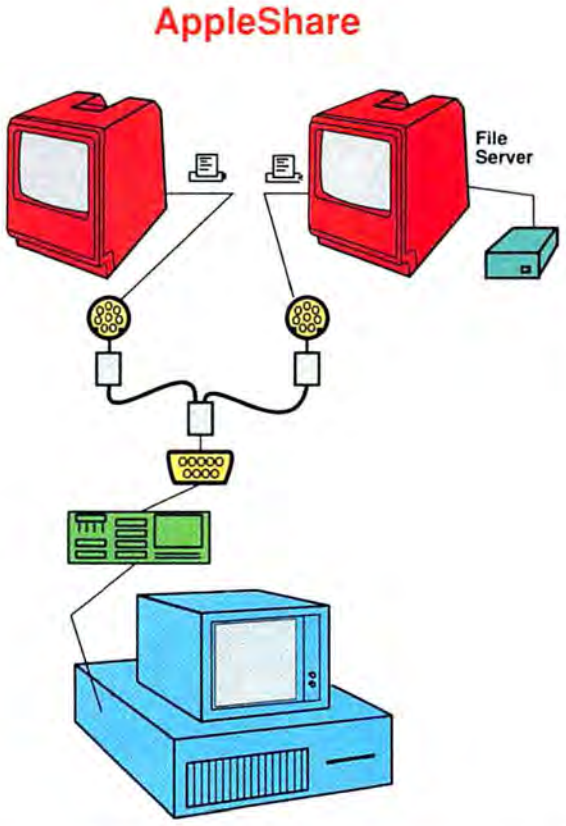
AppleShare works by assigning to one Macintosh in a network the job of dedicated file server. (There can be more than one.) Its sole purpose is to provide shared access to its hard disk for other computers on the network, either Macs or PCs.

Files can be protected so that other users can't access them. Access is controlled at the folder level. It can be for the folder's owner only, for a group — groups are defined by the Network Administrator — or for everyone on the net.

Installing AppleShare on a Macintosh workstation is just like installing new System software. You use Apple's Installer program, and the job is done for you automatically. You log onto AppleShare from the Chooser. The server appears on the desktop with an AppleShare icon and acts exactly as if it were a locally connected hard-disk drive. It just runs slower, especially when there is heavy traffic on the network. Folder protection is controlled from the Access Privileges desk accessory.

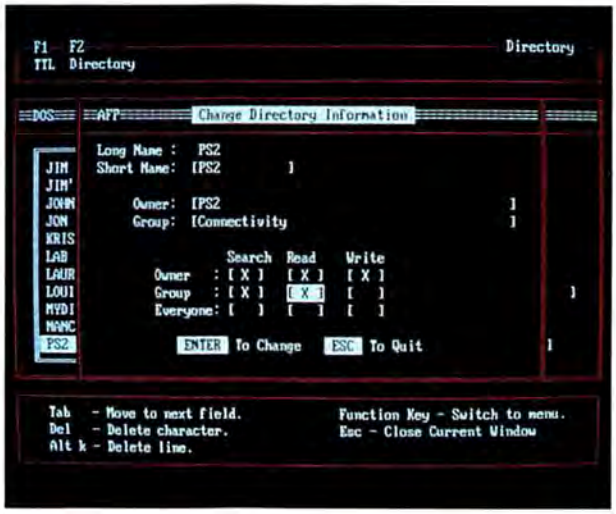
On a PC, it's a little more work. You must first install an AppleTalk PC card. But all you have to do to install the software is insert the AppleShare disk in drive A: and type `install`. You are prompted the rest of the way. The installer will even automatically modify your Autoexec.bat file.

Logging onto AppleShare servers and controlling directory-access privileges are both done through a DOS program called DA, a menu-driven, easy-to-use memory-resident routine. As with the Macintosh, access to the server is just like access to a local DOS disk. Files and folders (subdirectories) that you are not authorized to access simply don't show up in the DOS directory. And, to its credit, AppleShare gracefully allows PC users to see folders and filenames placed on the server by a Mac whose names are longer than the eight characters allowed for DOS files.

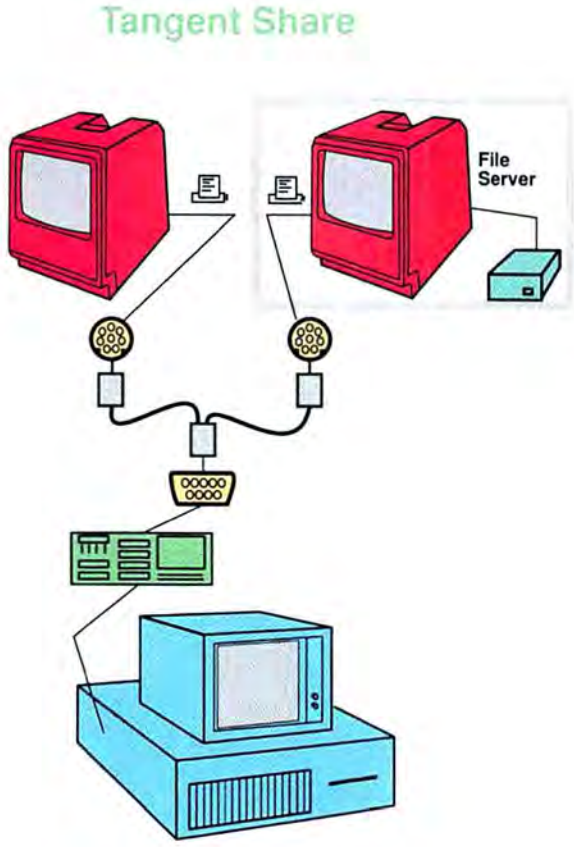


AppleShare is not a cheap solution. The license costs $799, which allows you to install it on an unlimited number of Macintoshes. PC AppleTalk cards cost $149 apiece, in addition to which you have to figure the cost of the Mac you dedicate to the task of server. But if you need to share files among a number of machines, it is an excellent solution.

Just one question for Apple: How come the PC AppleShare DA doesn't support a mouse?



Apple markets AppleShare PC to let DOS users connect to an AppleShare network. Their DA utility is the route by which users access various AppleShare features, such as the logon function shown here.



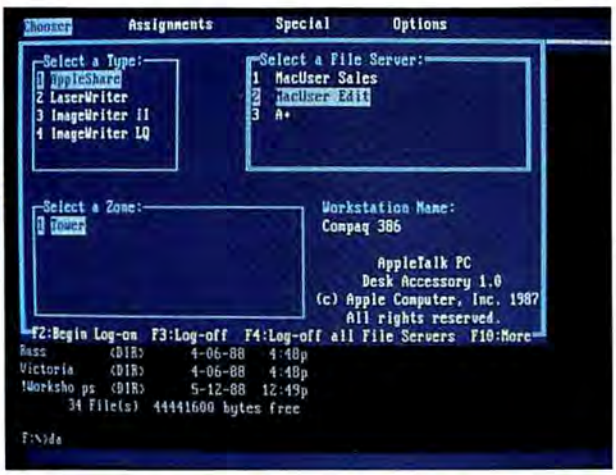
TangentShare

Tangent Technologies also offers an AppleTalk board and AFP-compatible software for PCs. We worked with TangentShare, the company's product for DOS machines and PS/2 models 25 and 30. This package includes a Tangent ATB II board and the TangentShare client software, which offers the same functionality as AppleShare PC. While TangentShare's interface is somewhat different, it too works from a menu-driven memory-resident utility.

We did have a little trouble with access privileges using TangentShare. You're supposed to be able to set privileges so that everyone can copy files to a folder, even though only the owner can then read them. But this didn't work; we had to give everyone full access privileges to a folder before we could copy files into it. Before AppleShare PC, TangentShare was the only AppleShare-compatible solution for the PC. But now, considering that TangentShare costs about $100 per PC more than its Apple competition, we can't really see its advantage.

More exciting are two products Tangent had announced but not yet shipped at press time. TangentShare MCA is a $400 package that includes an AppleTalk card and software for microchannel machines (PS/2 models 50, 60, and 80). This is the only microchannel AppleTalk board currently available. Even more intriguing, the TangentShare Server is a $700 package that allows a DOS machine to be used as an AppleShare server. Although we were unable to test this product, it promises to be a cost-effective alternative to AppleShare running on a Mac server, since PC compatibles can be purchased much more cheaply than Macs.

Both of these products should be available by the time you read this. We'll have a full report in a future issue.



TangentShare offers an alternative to Apple's AppleShare PC for DOS users who want to participate in an AppleShare network. A menu-driven memory-resident utility allows users to log onto network servers and to set or change access privileges for folders stored there.

TOPS

Before AppleShare, TOPS was the only file-sharing network around for Macs and PCs. It is not AFP-compatible, however, and therefore won't work with AppleShare. Nevertheless, it's an extremely popular program. Its basic approach differs from AppleShare's in that there is no dedicated server. Instead, any workstation on the network can "publish" (make visible to the network) all or part of the files on its local hard disk. Any workstation can "mount" a published volume. It will then appear to others as a local disk. In other words, any disk or folder on the network can become a server.

One obvious advantage of this scheme is that it avoids the expense of a dedicated server. It also allows each user on the network more flexibility to customize his or her own desktop by

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Software for the Macintosh, software for the Wang (8" or 5.25"), software for the PC and a direct connect cable (you can use a Hayes or compatible modem if you prefer), is included in the MacLink*Plus* package; everything you need to be up and running in minutes.

So call (203) 268-0030 for your nearest DataViz dealer, because no matter which Wang system you're using, there's a MacLink*Plus* solution to connect it to the Mac.

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Wang 2110 Terminal



Macintosh 2110 Terminal Emulation

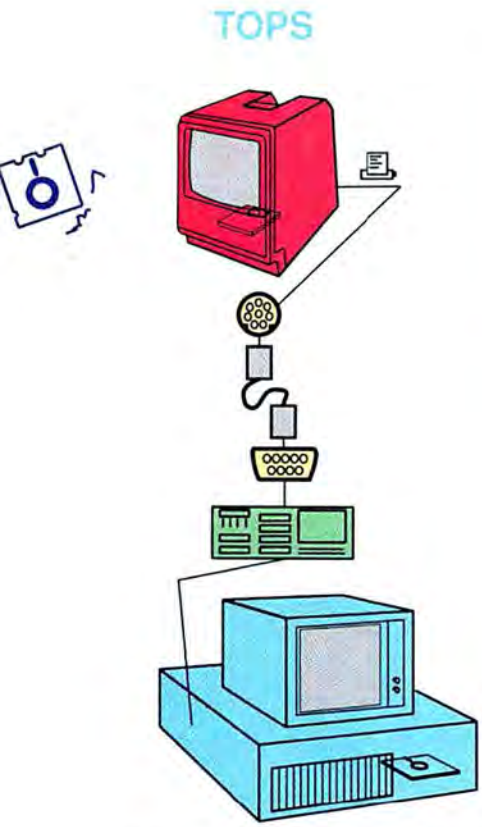


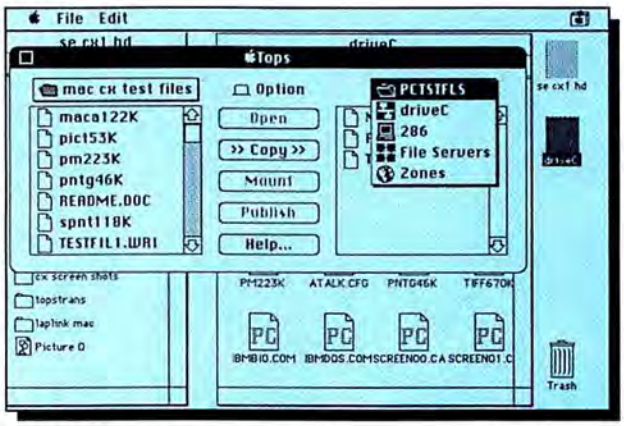
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MACWORLD EXPOSITION
BOOTH 414





DOS directories, when mounted on a Macintosh with the TOPS DA, appear as folders on the Mac's desktop. TOPS provides a special icon to identify PC files.

mounting only those volumes that are of interest. On the other hand, managing a network in which any computer can be a server is a potential nightmare. If you're working on a file on someone else's hard disk, any time they turn off their computer or disk drive you could be seriously out of luck. Especially if you need a key or a password to turn it back on. The larger a network gets, the more problematic this can become. A dedicated server is more likely to be available when you need it.

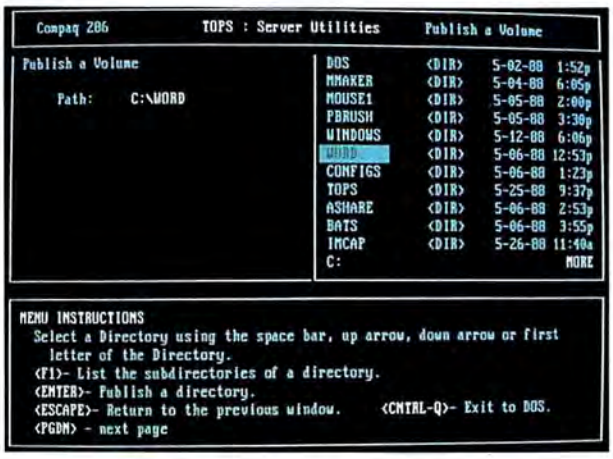
TOPS installs automatically on the Mac. You use the TOPS DA to publish and mount network volumes. A mounted volume appears as a local Macintosh disk.

On the PC, you must first install an AppleTalk card. TOPS's FlashCard provides PC access to an AppleTalk network, but, because it doesn't follow the LocalTalk standard, you can't use it to run AppleShare or TangentShare. (Apple's and Tangent's cards do support TOPS.)

Running the PC TOPS install program prompts you through the steps necessary to get the software up and running. As with AppleShare and TangentShare, TOPS PC is controlled from a memory-resident utility with a straightforward interface.

TOPS Mac comes with the MacLink Plus translation software (just the translation part, not the telecomm part), but the currently shipping version of TOPS (2.0) doesn't include a full set of translators. An upgrade is expected soon.

TOPS offers a cost-effective network alternative to AppleShare and TangentShare for small networks. Its popularity attests to its usefulness. Its failure to conform to Apple's LocalTalk and AFP standards, however, could become a more serious limitation as time goes by.



With this TOPS/PC menu-driven utility, users can "publish" DOS directories, making the files they contain accessible to other users on the network.

A FINAL NOTE

All three of the network solutions discussed here also offer printer-sharing utilities that significantly enhance the value of the respective products. Unfortunately, because of space limitations, we will have to defer discussion of these utilities to a future issue in which we will focus on networks in more depth.

PICK OF THE CROP

You want it straight and simple? Here's our vote:

Best serial connection: MacLink Plus. No matter what solution you choose, you'll want MacLink Plus as well, for the translators. PC lovers will like LapLink Mac.

Best external drive: the DaynaFile, unless you're also getting a coprocessor, in which case you'll need Apple's PC 5.25 Drive. DOS types, check out MatchMaker.

Best network: AppleShare; and keep your eyes open for Tangent's microchannel AppleTalk card and Novell's NetWare product for the Macintosh. TOPS for small networks, but beware of possible future incompatibility.

Best coprocessor: cannot compute – insufficient data.

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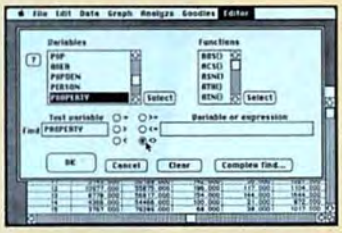
Statistics Basic statistics, frequencies, t-tests, post-hoc tests Multiway crosstabs with log-linear modeling, association coefficients, PRE statistics, asymptotic standard errors Nonparametric statistics (sign, Runs, Wilcoxon, Kruskal-Wallis, Friedman two-way ANOVA, Mann-Whitney U, Kolmogorov-Smirnov, Lilliefors, Kendall coefficient of concordance) Pairwise/listwise missing value correlation, SSCP, covariance, Spearman, Gamma, Kendall Tau, Euclidean distances Linear, polynomial, multiple, stepwise, weighted regression with extended diagnostics Multivariate general linear model includes multi-way ANOVA, ANOCOVA, MANOVA, repeated measures, canonical correlation Principal components, rotations, components scores Multidimensional scaling Multiple and canonical discriminant analysis, Bayesian classification Cluster analysis (hierarchical, single, average, complete, median, centroid linkage, k-means, cases, variables) Time series (smoothers, seasonal and nonseasonal ARIMA, ACF, PACF, CCF, transformations, Fourier analysis) Nonlinear estimation (nonlinear regression, maximum likelihood estimation, and more).

Data Management Spreadsheet data editor with row/column cut and paste Transformations executed via menus and dialog boxes Import/export test files Missing data, arrays, character variables Character, numeric, and nested sorts Subgroup processing with SELECT and BY Value lables and RECODE statements Unlimited cases.

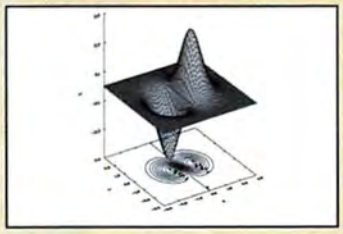
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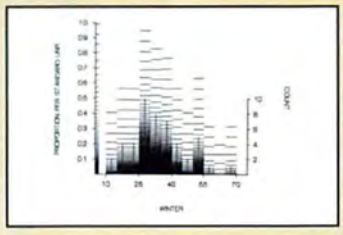
Mac screens



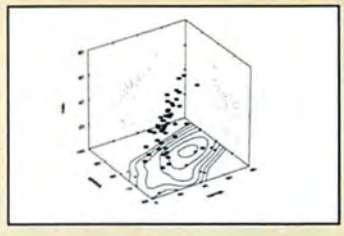


LaserWriter™ graphics

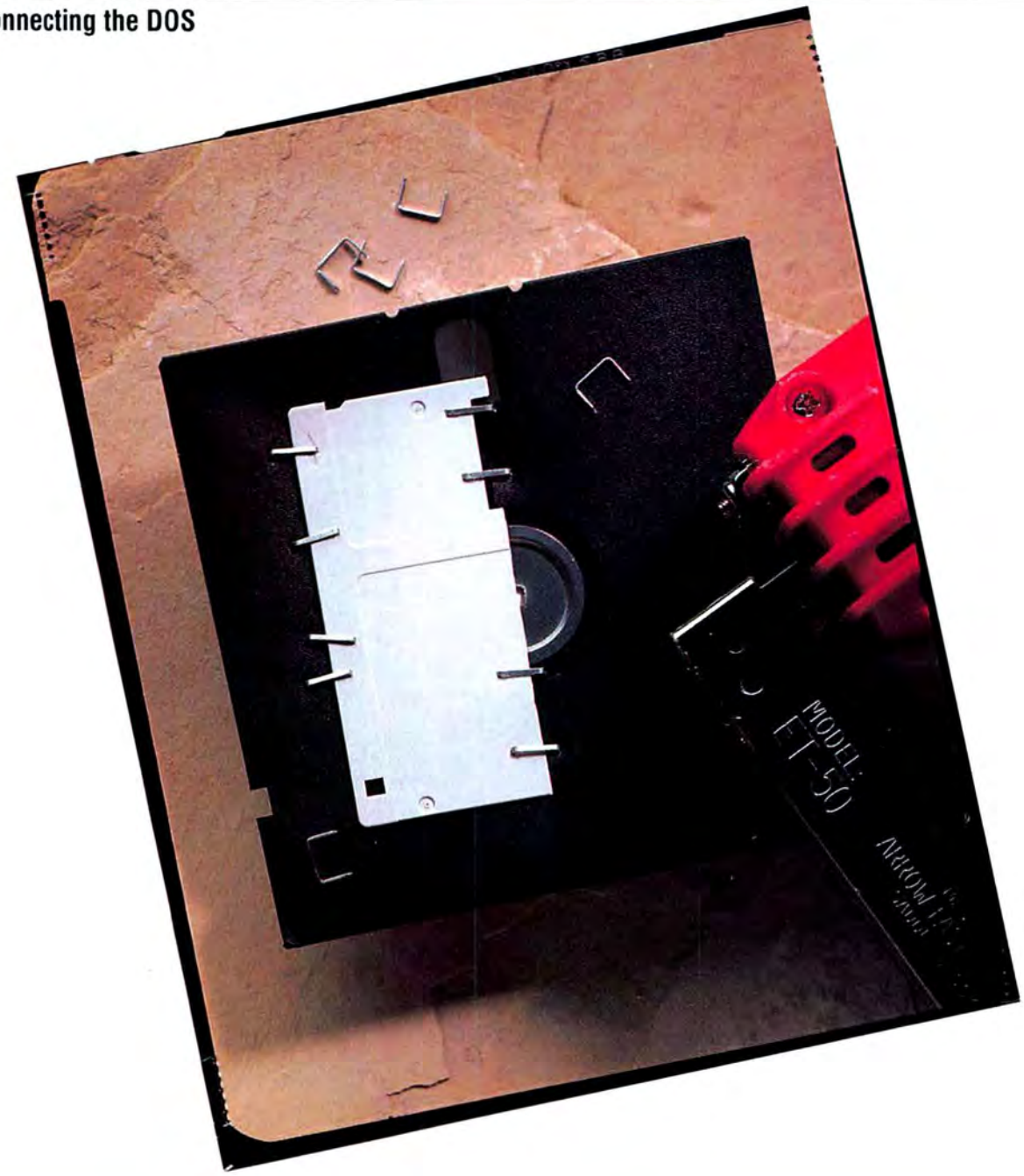








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(800) 356-0283
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AnyText: Works with Apple File Exchange on the Mac. Runs on Mac Plus, SE, II, and 512E; System 4.0 and Finder 4.2 required. IBM XT, AT, and 386 machines; less than 20K and DOS 3.0 or greater required. $95.
AnyGraph: Works on Mac 512E, Plus, SE, and II; System 4.0 and Finder 4.2 required. IBM XT, AT, and 386; DOS 3.0 or greater and less than 20K memory required. $95.

DataViz
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(203) 866-4944
MacLink Plus: Works on Mac Plus, SE, and II; System 4.2 or later and Finder 6.0 or later required. IBM PC, AT, and PS/2; 256K and DOS 2.1 or greater required. $195.
MacLink Plus/Translators: Available in July. Contains AFE-compatible translators only. $159.

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Bothell, WA 98011
(206) 483-8088
LapLink Mac: Works on Mac 128K, 512K, Plus, SE, and II; System 1.1 and Finder 1.1 required. IBM PC, AT, XT, and PS/2; 128K memory and DOS 2.0 required. $139.95.

Vano Associates
P.O. Box 12730
New Brighton, MN 55112
(612) 788-9547
MacChuck: for software and cable, $34.95 for universal cable only. $79.95.
Works on all Macs and PCs. Call manufacturer for system requirements.

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Apple File Exchange, included in System Software Update 5.0 or later. Requires memory, runs on all Macs with at least 512K.

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Salt Lake City, UT 84144
(801) 531-0600
DaynaFile: Runs on Mac 512E with third party SCSI port, Plus, SE, II; System 3.2 and Finder 5.3 required. IBM XT, AT, PS/2; no memory or system requirements. $650-$1,000, depending on drive configuration. [*MacLink Plus for DaynaFile, $125, is available from DataViz.*]

Micro Solutions
132 W. Lincoln Highway.
DeKalb, IL 60115
(815) 756-3411
MatchMaker: Works with PC, XT, AT; 192K, DOS 2.0 or greater required. $149.

Peripheral Land
47800 Westinghouse Drive
Fremont, CA 94538
(415) 657-2211
Infinity: Runs on Mac Plus, SE, II; System 4.2 and Finder 6.0 required. $1,395.
Infinity MS: Runs on IBM XT, AT, PC; 256K memory and DOS 2.1 or greater required. $1,095.

Networks

Apple Computers
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
AppleShare: Runs on all 1-megabyte Mac machines; System 3.3 and Finder 5.3 required. All DOS machines; 384K, DOS 2.1 required. $799 for server and Mac client software, $149 for PC card and software.

Tangent Technologies
P.O. Box 921205
Norcross, GA 30092
(404) 662-0366
TangentShare: Board can be installed in any PC, XT, AT, or PS/2 model 25 or 30 or compatible; 256K, DOS 3.1 or greater required. $325.00, includes client software and Tangent ATB II board.
Tangent ATB II: $250 (Board only, client software not included.)
TangentShare MCA: $395 includes AppleTalk interface board for PS/2 models 50, 60, or 80 and client software. Requires 256K, DOS 3.3 or greater. Available in July.
Tangent MCA: $350 (Board only, client software not included.)
TangentShare Client: $99 (Includes only software, no interface board.) Software works on any AFP-compatible server.
TangentShare Server: $700 (complete kit with AppleTalk interface board, server software, PC and Mac software, and standard AppleTalk Connector Kit) Server runs on any DOS machine or compatible; 512K, DOS 3.2 or greater required.

Tops
950 Marina Village Parkway
Alameda, CA 94501
(415) 769-8700
TOPS Macintosh version 2.0: Runs on any Mac with 512K or more; System 3.2 (or greater), Finder 5.3 (or greater) required. $249.
TOPS DOS version 2.0: Runs on IBM PC, XT, AT, PS/2 model 30 or compatibles; 512K, DOS 2.1 required (640K, DOS 3.1, or higher recommended). TOPS FlashCard or other AppleTalk compatible card also required. $189.
TOPS FlashCard: Works with PC, XT, AT, PS/2 models 25 and 30 or compatibles; 200K, DOS 2.1 or greater required. $239.

Coprocessors

AST Research
2121 Alton Avenue
Irvine, CA 92714
(714) 863-0181
Mac 286: Works only with Mac II; 2 megabytes and System 1.1 and Finder 1.1 or greater. Apple 5.25 Drive required. $1,599.

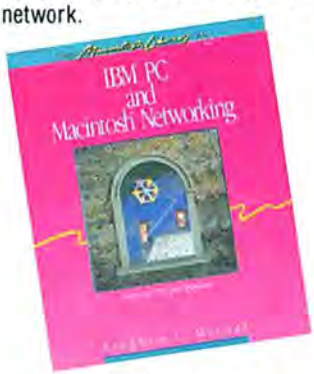
Insignia
1255 Post Street, Suite 625
San Francisco, CA 94109
(415) 885-4455
Soft PC: Works on Mac SE (with accelerator card) or Mac II. 2 to 4 megabytes of RAM. System 4.3 and Finder 6.0. Three megabytes of available space on hard disk required. $595.

PerfecTek
1455 McCarthy
Milpitas, CA 95035
(408) 263-7757
Mac+ PC: $995 for the Mac Plus One megabyte, System 4.0 and Finder 5.4 required.
Mac+ PC SE: $1,195 for the Mac SE One megabyte, System 4.0 and Finder 5.4 required.
Mac+ PC II: $1,595 for the Mac II One megabyte, System 4.0 and Finder 5.4 required.

CONNECTIVITY LIBRARY

IBM PC and Macintosh Networking by Stephen L. Michel; $21.95
Copyright 1988
Howard W. Sams/Hayden
4300 W. 62nd Street
Indianapolis, IN 46268
(800) 428-3602

This well-researched book explains how to connect PCs and Macintoshes in a network. It first deals with the two main solutions available today for hooking up the two machines and then discusses more complex issues of file transfer across the network. Author Michel discusses two software/hardware product combinations (TOPS and AppleShare) that allow the PC and the Mac to share files, storage, and printers within the same network. The book also goes into use of TOPS or AppleShare on a Mac-only LAN or a PC-only LAN. Also covered are how the Macintosh and PC differ and how to manage the network.

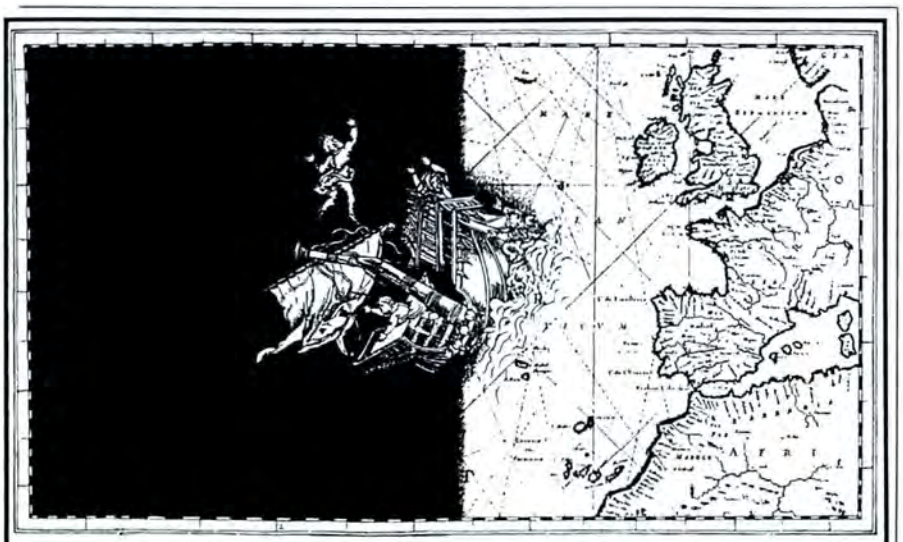


MacAccess — Information in Motion by Dean Gengle and Steven Smith; $21.95
Copyright 1988
Howard W. Sams/Hayden Books
4300 W. 62nd Street
Indianapolis, IN 46268
(800) 428-3602

When it is crucial to send information to someone via the Mac, the alternative to printing it out, mailing the document, and rekeying the information into the second computer can be found in this book. Looking at hardware solutions, authors Gengle and Smith explain how you can link your Mac to other computers. They give you a range of differently priced options. Some of the cheaper options include building a simple cable to link the Mac directly to an IBM PC. The book also looks into proprietary information, file formats, data security, and data integrity. Excellent for the technically minded.



MacLANs — Local Area Networking with the Macintosh by Mark D. Veljkov; $21.95
Copyright 1988
Scott, Foresman Computer Books
1900 E. Lake Avenue
Glenview, IL 60025 (312) 729-3000



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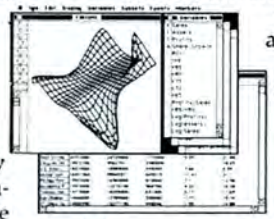
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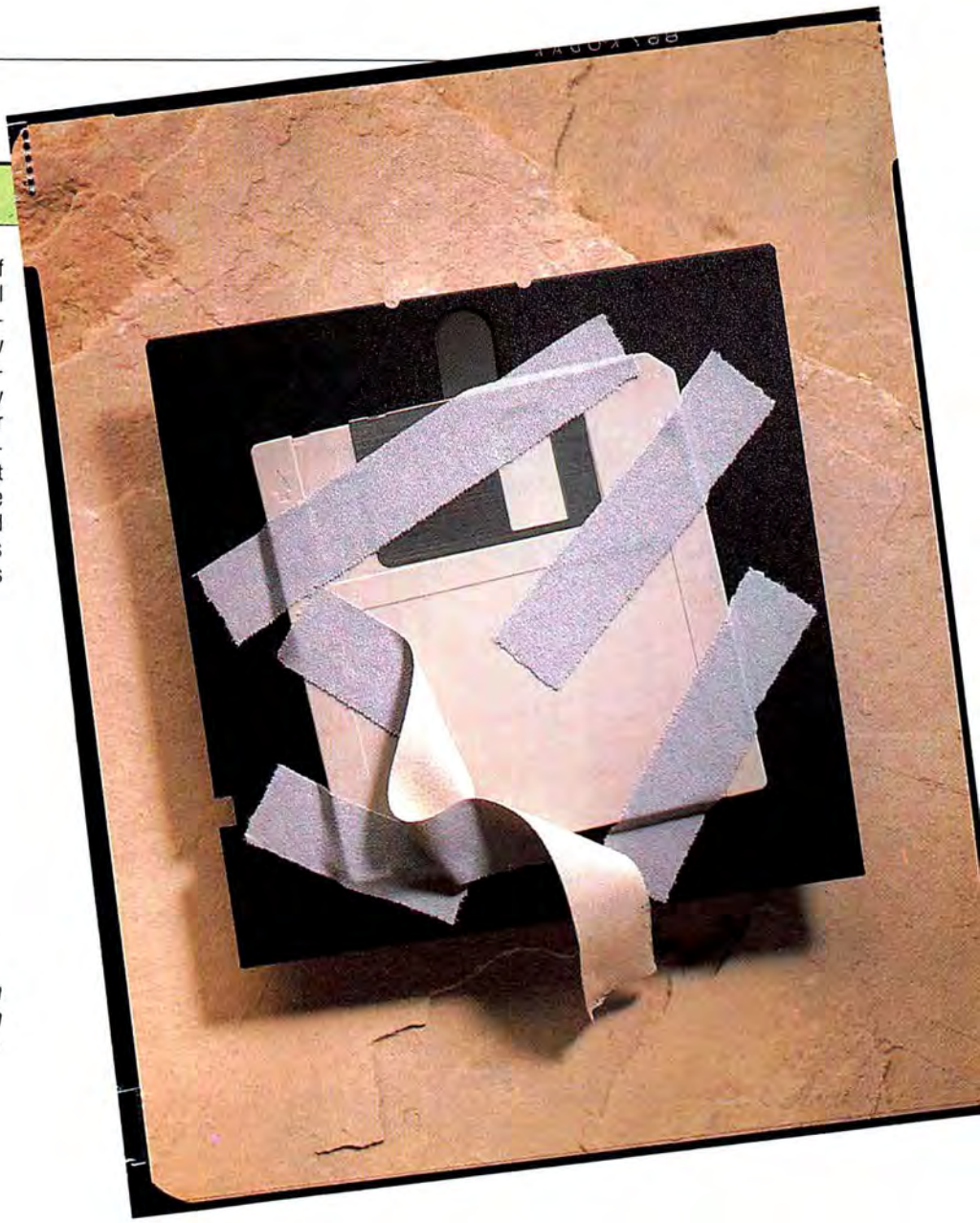


MacUser Eddy Award Winner 1988

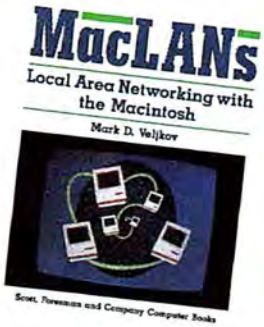
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This resource book is a compilation of tips and product information that will help you make decisions on networking matters. The book explains how Macintosh LAN applications are setting new communication standards by providing both ease of use and power for the user. Auther Veljkov also includes information on companies that manufacture Mac LANs such as the hardware, software, installation, and configuration; LAN peripherals such as modem servers; and a guide to the dos and don'ts of configuring LANs.



The MS-DOS – Mac Connection: Data sharing, networking, and support on the mixed office by Cynthia W. Harriman with Jack Hodgson; $21.95
Copyright 1988
Prentice-Hall/Brady
Route 9 West
Englewood Cliffs, NJ 07632
(201) 592-2000

This book helps even the inexperienced to learn to survive the mixed-micro office by making their Mac and IBM PC share data and resources. This book discusses the tools and techniques a business needs to combine



PCs and Macs, and it tells you how to implement network and non-network connections, translate data between the Mac and PC, use coprocessors, share printers and other peripherals, and understand the differences between the Mac and the IBM to support users. The book also explains why some people work best with MS-DOS, while attempting to give experienced users shortcuts to upgrade their knowledge.

The Well-Connected Macintosh — An overview of desktop communications by Tony Bove and Cheryl Rhodes; $11.95
Copyright 1988
Harcourt, Brace, Jovanovich
1250 6th Avenue
San Diego, CA 92101
(800) 543-1918

The goal of this book is to introduce new users to the world of communication and information-sharing technology. Bove and Rhodes examine the Mac, AppleTalk, and modems and how they relate to the end user's needs and interests in desktop communications. They discuss electronic messaging, exchanging documents and graphics,



sharing large databases and laser printers, and even connecting with airlines to make reservations and purchase tickets. Experience is written throughout this book and it is an exploratory manual for learning about the Mac and desktop communications.

How to use type

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There's Roger Black, noted pub-

Erik Spiekermann On Forms:
"Forms and schedules are typically produced fast, in large quantities, on not very high quality paper. These three families will hold up extremely well under those conditions."

INTERVIEW



Allan Haley On Presentations:
"These faces work well over a range of sizes, but particularly well in larger sizes. They also have high impact and good readability—just what you need to make people remember what they've read."



Six steps to good graphics

1 Simple is best.
One point per slide, with as few words and lines as possible. Reverse type is best for slides. Stay away from all caps. Make graphs simple and easy to read. And use lots of slides. Nothing is more boring than talking for 10 minutes to a single slide.

2 Use signposts.
Use type and ornaments to guide the reader through your message. Things that say, "Stop here," "This is important," "This relates to this" can help add clarification and emphasis. They also add a little variety. Remember you're selling not boring!

3 Attract attention.
Use type size and typeface style (but not more than two) to create emphasis and add memorability. Incidently, boldface works better than italics for this. It's more readable and shows up better.

4 Feed bite-size
This applies to slides
heads in partare like
They aren't really rea
as reacted to. So they
designed to make an
quickly, and then it's
one.

5 Put out the welcome mat.
Whatever you do, it needs to be inviting. It's competing to time and attention, two commodities in far too short supply these days. The way to make sure your ideas get their share is to make your readers or your audience want to get into what you're presenting.

6 Look at what you're doing.
From the audience's point of view. Your perceptions and opinions are absolutely valid. Pretend you're one of the people in your

Allan Haley
Executive Vice President of the International Typeface Corporation. Creates typefaces. And tells people how to use them in "fy(t)i," his how-to column about typography and communication that appears in the respected graphic design journal, U&lc. When it comes to presentation graphics, he can put on quite a show.

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Presenting: Allan Haley
For Allan Haley, typography and presentations are inextricably all tangled up together. As Executive Vice President of the International Typeface Corporation, Allan makes a lot of presentations. And they're all about type. So he knows whereof he speaks in talking about both.

But almost nobody starts out at the top and Allan is no exception. He began his career in type as an apprentice typographer. Since then, he's become an accomplished type designer, creating many popular faces and winning numerous awards in the process.

Having grown up in California and now living in New York, Allan is comfortably bi-coastal. A businessman by trade and an educator by inclination, he has a M.F.A from UCLA where he has also taught. He is a typographer's biographer (he knows who designed every typeface and has some perfectly scandalous stories about quite a few of them), he's the author of the definitive work on photolypography (certified appropriately enough, Photolypography), and too many articles to

like an expert.

lication designer, on newsletters.

Internationally recognized type designer, Erik Spiekermann, on forms and schedules.

And author, typographer, Allan Haley, on presentations.

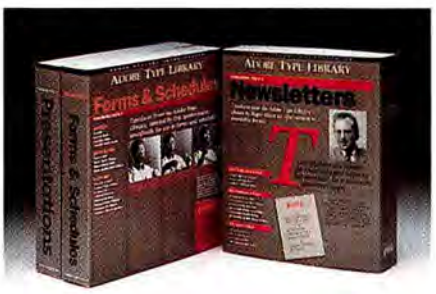
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(And you'll come to realize that Palatino isn't a horse at all, but one of the more than 200 typefaces in the Adobe Type Library.)

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Erik Spiekermann
Erik Spiekermann heads MetaDesign in West Berlin, Germany, and is an internationally recognized authority on typography and design. Widely published in trade journals both here and in Europe. The German Post Office and Herman Miller use his designs. And now, so can you.

Typefaces in the Forms and Schedules Publishing Pack:

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INTERVIEW

First Impressions

Can a designer who loves good type, good design, and good taste find happiness on a desktop?



Roger Black has designed more magazines than most people read. He has also art directed more of what most people read than almost any other designer in his field.

During his distinguished career, he has been director of editorial art at The New York Times. Prior to that, he was chief art director at New York, New West and Rolling Stone.

He has also designed formats for magazines and newspapers all over the world, including Newsweek, Majorpet Magazine and Newsdaily, a Mexico City daily.

Most often than not, this redesign includes a typeface specifically developed for the publication, as in the cases of Newsweek and Rolling Stone. Not surprisingly, Mr. Black also has several typefaces to his credit.

Here, this internationally recognized expert on type and publication

You've said that type is the easiest and least expensive way to make a difference. Would you elaborate?

Type is the first impression you have of what you're about to read. Each typeface, like a human face, has a subtle character all its own. Depending on which face you choose, the same word can have many different shades of

Talk about the three typefaces you selected for this Publishing Pack.

If you think of design as largely a question of playing contrasts and if you're going to have a selection of typefaces for a publication you should have faces with some contrast. Galliard is very swanky and elegant. A good contrast to Franklin Gothic, which is big and bold. And Century

So much great design has already been done without computers, what's so terrific about using one?

The enchanting thing about computers is that one person can sit down, write, layout, and print whatever they want whether it's poetry, recipes, a book, or a newsletter.

You're in control. Completely. It's also immediate. You can proof and refine and correct things instantly. It's like having your own printing press and type house. In fact, it's not *like* that at all. That's exactly what you have.

What's the major advantage of desktop publishing?

The interactiveness. How many times has a traditional designer marked up type only to have it come back and realize there's something wrong with it and it has to be sent back and another day is gone?

On the desktop, you simply do it until you are completely happy.

Tell us your thoughts about the design of this Interview page.

This page is a basic 5 column tabloid, but because the body of the article starts in the second column, it makes the page seem more spacious.

The large question at the top of the second column (which was set in Franklin Gothic Heavy) centers the weight of the page, and it leads the reader's eye down to the beginning of the main body of text. The white space between

If there was one typographic design rule to break, what would it be?

There really is no rule that can't be broken. Take the grid for example, you should be able to play with it and not take it too seriously. It's there as a guide, but if you don't ignore it sometimes, everything you do will look boring. Another thing is, there is no such thing as the right typeface, for example, this page may have worked nicely with the answers set in Franklin Gothic Demi. My point is, you have to experiment a lot to get a good solution. That's one of the real strengths of using a computer, you can change type styles instantly and see how the new setting looks.

Are there some tips you'd like to pass along to anyone who is designing a newsletter?

First off, hire a professional(laughs.) Keep the copy to a minimum. That'll let you get the type up bigger. The other thing is, people have a limited amount of time to read these days, so you're going to want to make it as desirable and as easy to read as possible. Make the design simple. Try for contrast. Don't average everything out. If you have favorite publications, imitate them.

Personally, I think almost anybody can do some design and put out a decent looking document. It doesn't have to be heavily designed, but a document that has been desktop published, if it's been done thoughtfully, is going to command so much more attention. This technology is a force that is going to move everybody up to where we

Roger Black On Newsletters:
"With these three typeface families, you'll have good contrast, excellent legibility, and a great deal of versatility. In other words, you should be able to do just about anything in a newsletter."

Roger Black
Former director of editorial art for The New York Times, and chief art director at New York, New West, and Rolling Stone magazines. Redesigned Rolling Stone and Newsweek. Internationally sought after as a publication designer. You should see what he can do for a newsletter.

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Switch Hitters

Four programs that share and share alike.

You may as well face up to it. Merits aside and "Moonlighting" notwithstanding, there are lots more IBM PCs in a typical office than there are Macs. Who says it's a fair world?

There are three things you can do about it. You can evangelize, but that's a long-term solution, runs the risk of labeling you as an eccentric, and won't get that proposal out by 5 o'clock. You can resolutely go about your own business using your own software, but that isolates you from everyone else in the office. Besides, that nullifies the Mac's easy networking — one of its nicer features. The last remedy is in many ways the most attractive: cooperation and subversion. More and more software programs have versions that run in both the Mac and the IBM worlds, and many of them feature at least some means of exchanging data between the two versions.

The Big Four in data compatibility are Excel, WordPerfect, Word, and PageMaker. All four are popular on both hardware platforms — most of them are market leaders on one machine or the other. It's entirely possible that one or more of them is already being used somewhere in your office. And who could mind if you brought in this cute little computer that runs the same software as those clunky ol' PCs, right?

BY DANIEL J. ROSENBAUM



GEOFFREY NELSON



Just one thing. This business of swapping data between hardware platforms is essentially straightforward, but there are things you should know ahead of time. If you aim to swap data from one machine to the other and back, you'd better know what works and what doesn't — and you'd better know it before you're under the gun. Airily dismissing what looks like an unexpected disaster is much harder when it's under a critical deadline.

The first problem is a physical problem: moving the data from one machine and disk format to the other (see "Connect the DOS" in this issue). As a point of information, I used DataViz's MacLink Plus, transmitting and receiving binary data without using any of the conversions the program can do. Everything in this article should also work with any other binary data-exchange technique.



Figure 1: PC Excel and Mac Excel figure dates differently, so be sure they both start counting from 1904.

WINDOWS AND OTHER POTHOLES

Before we start talking about data transfers, we should talk for a minute about Microsoft Windows. Windows is the MS-DOS world's major implementation of a Graphical User Interface. Some people say it's Microsoft's attempt to make PCs look and work like Macintoshes. The validity of that claim is currently the subject of legal action, so I'll let the court address that issue. The point is that Windows is much more finicky than the Mac operating system. Setting up Windows can be a real bear and is something you should let your MS-DOS friends worry about. (Fonts and printers are particularly troublesome.) Unfortunately, the DOS versions of PageMaker and Excel require Windows. So does Pageview, an add-in for PC Word roughly equivalent to Mac Word's Page Preview mode.

Try not to get involved with Windows problems. But you may have no choice. If Windows blows up when you try to bring in Mac data, it's probably one of these two problems.

First, be sure that you have Windows versions of all the fonts you've used in the Mac documents. In most cases, Windows will just ignore fonts it doesn't recognize and translate them into its default font.

Sometimes the software will crash.

The other problem you may hit is incompatible versions of the same software. When you try to transfer data for the first time, try to be sure that you've got the most up-to-date versions of all your software. As we'll see shortly, a program on one machine may have features not yet supported on the other. If you're running a first-generation version on the Mac and a third-generation version under MS-DOS, you're begging for trouble.

EXCEL

Microsoft's Excel is one of the most powerful spreadsheets in either the Mac or IBM world. You'd think you could just take Mac Excel data and run it under MS-DOS and vice versa, right? Well, think again.

For some totally inexplicable reason, Mac Excel and PC Excel can't read each other's files. A spreadsheet must first be saved in SYLK format using the Save As function and only then transferred to the foreign machine.

SYLK (Symbolic Link) is Microsoft's interchange format for spreadsheet data and has been around approximately forever. SYLK, which is also used to translate spreadsheet documents to and from Multiplan, translates formulas, values, formatting, field names, and display settings. It also translates print areas and borders, as well as charts.

Excel's documentation says macro sheets will convert correctly, but Microsoft tech support says the conversions are sometimes "flaky." Remember, too, that PC Excel 2.0 has over 40 functions that are not included in the Mac version. When transferred to the Mac, some will show up as text in a cell and others will give you a message saying they can't covert. Excel 1.5 for the Mac, which was scheduled to ship in June, is said to contain all the same functions as PC Excel 2.0, so this problem should disappear shortly.

If your PC Excel spreadsheet includes dates, there's one more thing you need to be aware of. PC Excel starts counting dates from January 1, 1900; Mac Excel counts from January 1, 1904. If you're bringing a PC Excel sheet over to the Mac, you have to be sure to set the check box in PC Excel's Options Calculation dialog box (shown in Figure 1) *before* you enter any data into the sheet. PC Excel will then reckon dates from 1904, just like its Mac counterpart.

What if you need to import a PC Excel sheet that didn't start life with the right benchmark date? You need to mark the entire sheet, copy it to Window's Clipboard, open a new sheet, set the correct reckoning, and paste the data back into the new sheet. Then save as SYLK and transfer. A pain? You bet.

When you bring a sheet over from MS-DOS, it will show up on your desktop as an anonymous document. If you look at it with ResEdit or DiskTop or something similar, you'll see that it — like everything else you import





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Figure 2: WordPerfect will show you only its own files, only files it can import, only its macros, only text files, or all files. If you want to bring a file in from the DOS world, set the button to All Files.

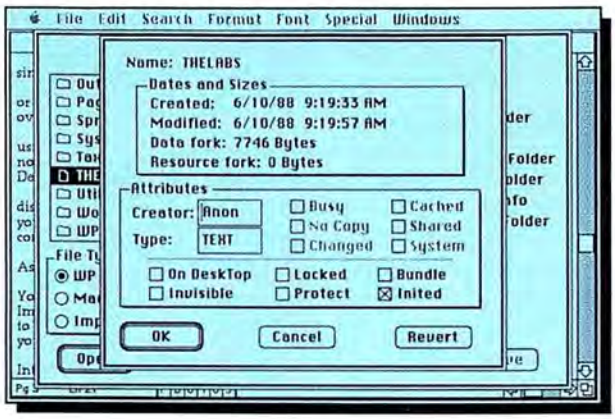


Figure 3: To properly import a file from WordPerfect 4.2, set the Type to WPPC and the Creator to SSIW. Click on OK, and you're in business.

from the DOS world — is a file of Type Text and Creator Anon.

Nonetheless, the Mac gives the file the benefit of the doubt, and it will appear in the Excel Open file dialog box. Open by double-clicking; if it's not an Excel sheet, it will look odd, but no harm will be done. Just close it and try a different file.

The first time you save a SYLK file, you'll automatically get a chance to save it under a different name or format. Type the name you want and click the appropriate button for file format. If you don't select Normal as the file type, the sheet's icon will still look like a generic document, but it will still launch directly by double-clicking from the desktop.

Just as a point of information, Excel on both machines can import and export files in a number of formats, including two for Lotus 1-2-3, and several for databases. But if all you're doing is moving data from Excel on one machine to Excel on another, make the transfer in SYLK; it retains the most information.

WORDPERFECT

Moving WordPerfect data between MS-DOS machines and the Mac is pretty simple, if you keep a few limitations in mind. On the Mac, it's trivial to save a file in an MS-DOS file format; do a Save As or Save Copy As, and click the radio button IBM WP 4.2. Then transmit the file over to the PC and Retrieve it into WordPerfect over there. Easy enough.

Going the other way is also easy, though there's one extra step. If you're using WordPerfect 5.0, save your file in 4.2 format; if you're still with 4.2, just save normally. After you transmit the file over to the Mac, it will appear on your desktop as a generic document of Type Text and Creator Anon.

The transferred file will appear in your file dialog boxes — at least in the ones that display Importable, Text, and All Files. But if you try to open the file at this point, you'll get a fair amount of extraneous garbage and much of your formatting won't come across correctly.

Before you open the transmitted file, you must change its Type and Creator. As it happens, this is easy with WordPerfect.

Click on File Management under the File menu (or press Command-L). You'll see a screen like the one shown in Figure 2. Click on either the Importable Files, Text Files, or All Files radio button, click once on the file you want to bring into WordPerfect, and click on the button labelled File/Folder Info. Now you'll see something like Figure 3.

Change the Creator to SSIW and the Type to WPPC. (SSI — Satellite Software International — was the original name of WordPerfect Corp. WPPC stands for WordPerfect PC, the file type for 4.2-format files.) Click on OK, and you may now Retrieve or open the file normally. It will even launch by double-clicking.

When you open the 4.2-format file, though, it will open into an Untitled window. You'll have to rename it when you save it.

(WordPerfect Corp. says an early revision of the Mac program will eliminate the need to change the Type and Creator when importing a file. The revision may be out by the time you read this.)

Keep in mind, though, that Mac WordPerfect and PC WordPerfect have different capabilities. The feature set in the Mac program is based on WordPerfect 4.1, so it doesn't include stuff like Table of Authorities, Concordance, and on-screen merge menus. If your DOS document uses them, they won't convert entirely. Likewise, the DOS program can't handle graphics, so graphics won't translate from the Mac. Nearly everything else translates well.

One more possible problem. When you send a file from the Mac to the PC, you may find as many as 127 characters of garbage at the end of your file. That's not WordPerfect's fault; it's the fault of your communications program.

The XMODEM protocol transfers data in blocks of 128 bytes. If the data being transmitted doesn't completely fill the last block, XMODEM will fill that block with nulls, i.e., garbage. Mac WordPerfect has routines to sup-

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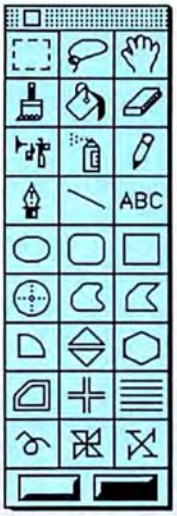
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Figure 4: This PageMaker file includes several blocks of text and two draw figures. Look at Figure 5 to see how the figures translate.

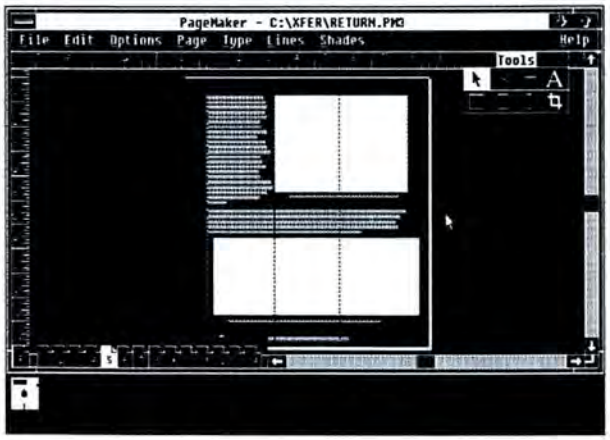


Figure 5: Draw figures sent from Mac PageMaker neither display nor print on the PC. When you send them back, though, they'll remain unmolested.

press that stuff; the PC program doesn't. So you may have to delete some characters. (Note that MacLink Plus doesn't add those extra characters.)

WORD

Moving text around with Word is easy. If you're sending a file over to the MS-DOS world, just remember to Save As, click on File Format, and set the format to Word (MS-DOS). Over on the DOS machine, it would be helpful to make the file's name end in .DOC. That way, Word will more easily recognize that it's one of its own files.

Word on the PC handles style sheets a little differently than Word on the Mac. On the PC, style sheets are held in different files than the documents themselves. On the Mac, style sheets (except the default style sheet) are incorporated into the documents.

When you move a file from the Mac, then, the style sheet is not really moved. The text's formatting reflects what the style told it to do, but the style itself doesn't transfer. Since MS Word 4.0 for the PC supports style-by-example, though, you can easily recreate your styles. Bringing files into the Mac is a little more complicated. Remember to transfer both the document and the style sheet it used. As with everything else we've seen so far, an MS-DOS file on the desktop will look like a generic document of Type Text and Creator Anon. Launch Word and open the file you're importing. You'll be asked if there's a style sheet associated with the file. If there is, you'll be asked to name it in a file dialog, and the two will be incorporated into an Untitled document. One problem. Although Word on both machines supports graphics, any graphics you've incorporated into your documents will be ignored. They won't transfer. Period. Sorry. Take it up with Microsoft.

PAGEMAKER

Now that version 3.0 of PageMaker is available on both the Mac and the IBM PC, we're finally confronted with the Patty Duke program. Identical cousins: They look alike, they walk alike, at times they even talk alike — what a crazy pair!

Just don't use object-oriented draw-type graphics if you can help it; they don't transfer to MS-DOS. They look and print like black rectangles. Figure 4 is a sample Mac PageMaker page. The two figures were placed from MacDraw. Figure 5 is that same page after transfer to the PC. It prints exactly as it looks.

But just because you can't look at the drawn graphics, that doesn't mean they're not there. When you move the file back to the Mac, you'll find them restored.

The problem is just that Windows can't deal with Draw-type packages. (See "Moving Pictures" in this issue for an in-depth discussion of the problems associated with PC-to-Mac graphics file transfer.) You can always move the file back to the Mac for printing. In fact, the file in Figure 4 was first moved to the PC and then back to the Mac.

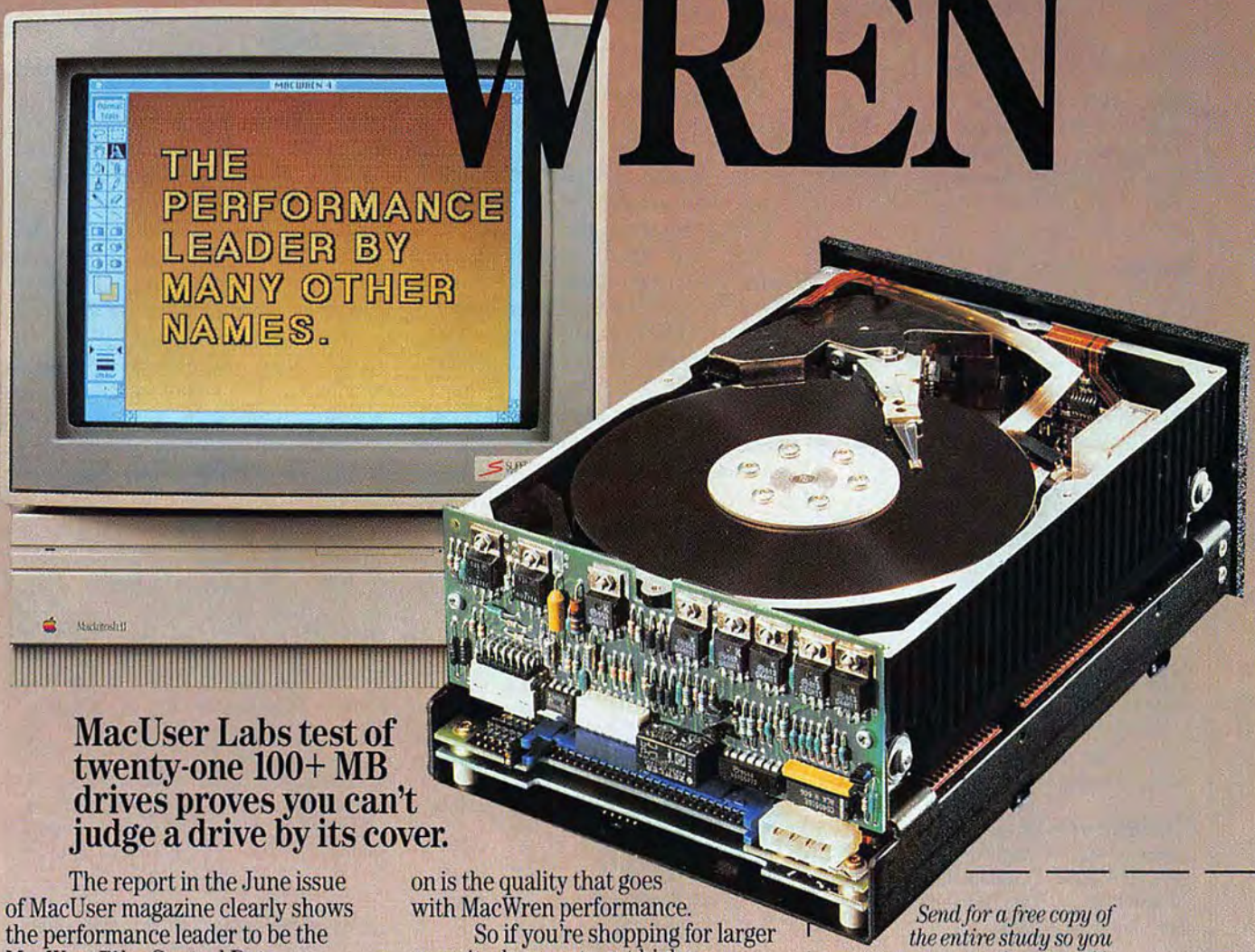
There's a similar problem with Encapsulated Postscript (EPS). It shows up on the PC as a black box but prints perfectly well. How do you tell the difference on the PC between an EPS graphic and a draw graphic? Print them; the EPS will print (if you've got a PostScript printer) and the draw picture won't.

Aldus could have done a little better here. When you place an EPS file that doesn't contain a screen image, Mac PageMaker can display certain information on-screen — such as file name and creation date — that PC PageMaker can't.

TIFF and paint files all transfer fine, as does all text. Remember, though, that if you're using a font on one machine that doesn't exist on the other, the text will revert to the default font.

Going from the PC to the Mac, the chief incompatibility is in HPGL files. HPGL (Hewlett-Packard Graphics Language) is the language spoken by

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CONTROL DATA

most pen plotters — sort of a Plotter PostScript. There's no analog in the Mac world, so HPGL graphics turn up on the Mac — and print — as gray boxes. Creator is ALD3; Type is ALB3.

PC PageMaker files look like generic documents on your desktop. Using ResEdit, DiskTop, or some similar utility, you can change the Creator to ALD3 and the Type to ALB3 (this is for PageMaker 3.0 files).

The Mac will then display the file with a PageMaker icon. But it's easier to simply launch PageMaker, open the publication file (it will open as Untitled), and then use the Save As command.

Moving a Mac file to DOS is even easier. Just move it and open it. No special saving is required, but PC PageMaker has a special affinity for files that have a .PUB extension.

CONCLUSION

In the best of all possible worlds, you'd never have to worry about anyone else's machines. In the next-best of all possible worlds, you wouldn't have to worry about file compatibility. In the world we've got, there are incompatibilities, but few of them are fatal. Follow these guidelines and you should be able to navigate the shoals with as few disasters as possible.

DANIEL J. ROSENBAUM, AUTHOR OF USING WORDPERFECT ON THE MACINTOSH (OSBORNE/MCGRAW HILL), DOES THIS DATA TRANSFER SORT OF THING CONSTANTLY.

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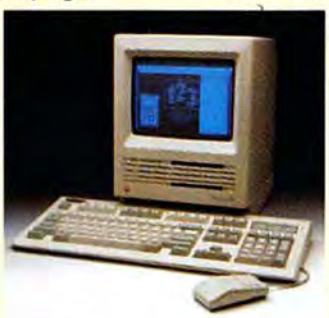
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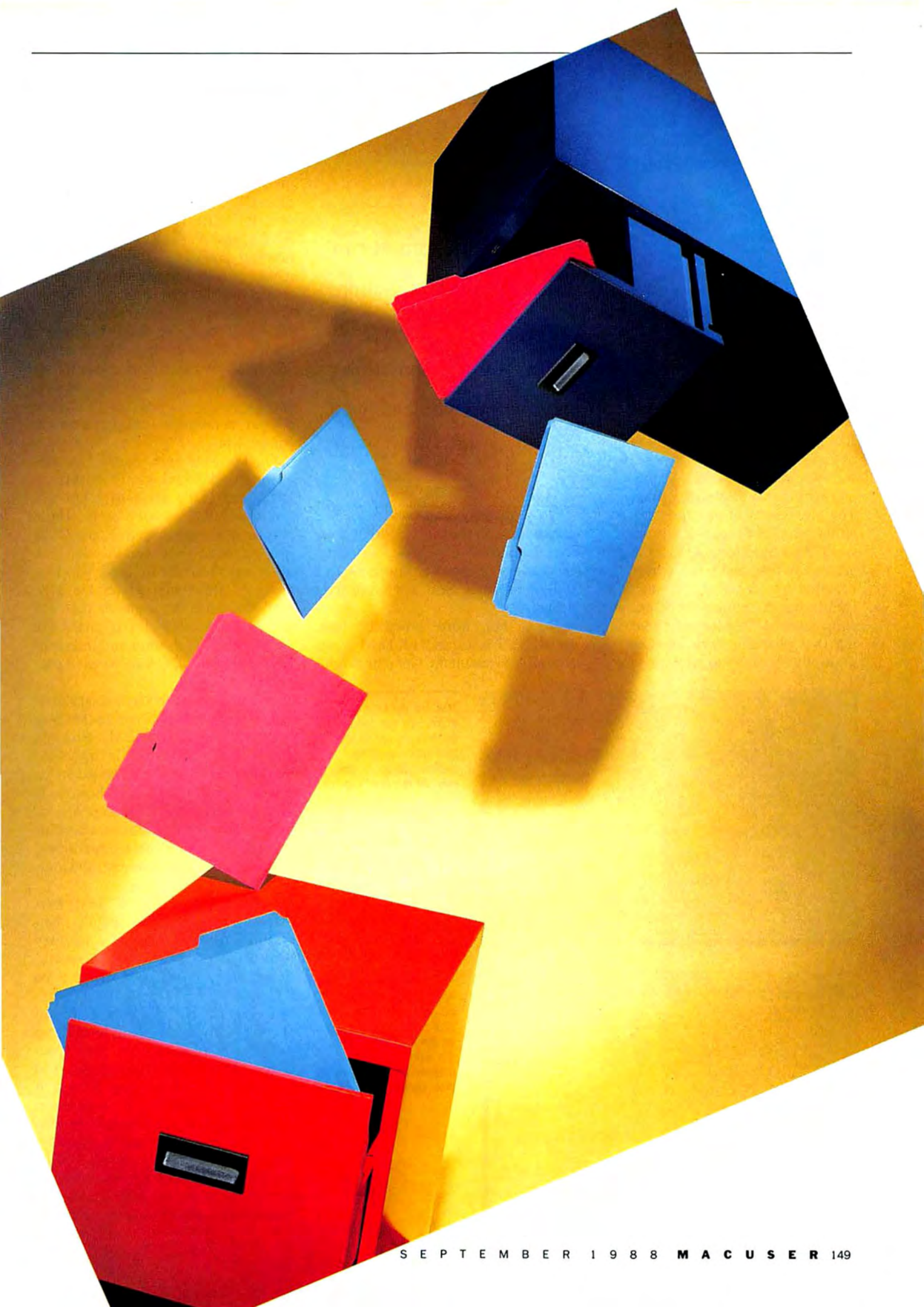
Owning a file that no one else in the office can open can leave you feeling like a fly trapped under a glass. Once your Macs and PCs are physically connected, you still have to exchange files, and that process can be very easy or very difficult, depending on your situation. But regardless of what your predicament may be, you should be able to solve your compatibility problems in one of three ways: directly, using matching programs; indirectly, using an intermediate format or program; or with file-translating tools that convert your data.

THE DIRECT APPROACH

Direct compatibility is the simplest way to achieve your goal. It exists when two programs can read and write other programs' "native" file formats. Microsoft Excel is a good example of this. It can read Lotus 1-2-3 files and can save in 1-2-3 format. The number of Mac programs that can read PC files is increasing, and this trend will gain momentum as more and more manufacturers introduce Mac versions of their DOS products. WordPerfect is a case in point. (See "Switch Hitters" elsewhere in this issue.)

If you're lucky enough to have both Mac and PC versions of your programs, half of your problem is solved: Just put the file on a disk that the destination machine can read — whether it's a network volume, a floppy, or

BY STEVE MICHEL



transferred through another means — and you're done.

THE LONGEST WAY 'ROUND

In a perfect world, everything would be directly compatible with everything else. Unfortunately, the world isn't perfect, so you won't be able to solve all your conversion problems in this way. You might (and probably will) use a program that doesn't have a counterpart on the other machine. In this case, you can use the indirect approach and convert your file to an intermediary, or pivot, file format.

A pivot file acts like a good second baseman in a 6-4-3 double play: It serves as a transition point between the originating and destination programs. The pivot file's format, however, isn't either program's native format; instead, it's a third format that both programs can read and write. Converting becomes a process of first saving or translating the source file on one machine into the pivot format, then reading that pivot file with another program. But because no pivot file format can support all the functions that a native file format can, you lose something every time you change a file to a different format. Still, it's better than nothing.

But because no pivot file format can support all the functions that a native file format can, you lose something every time you change a file to a different format.

• **DCA.** For word processor files, DCA/RFT is a standard. IBM created DCA (Document Content Architecture) so that editors using different machines could transfer formatted files. DCA actually comes in two flavors: RFT (Revisable Form Text) and FFT (Final Form Text). The latter, however, is rarely if ever used, because it was intended to encode documents that cannot be edited.

A number of programs support DCA, especially on the PC. This includes such standards as WordPerfect, Microsoft Word, Lotus Manuscript, DisplayWrite 4, MultiMate, and others. Typically, manufacturers include a separate program that performs the conversion.

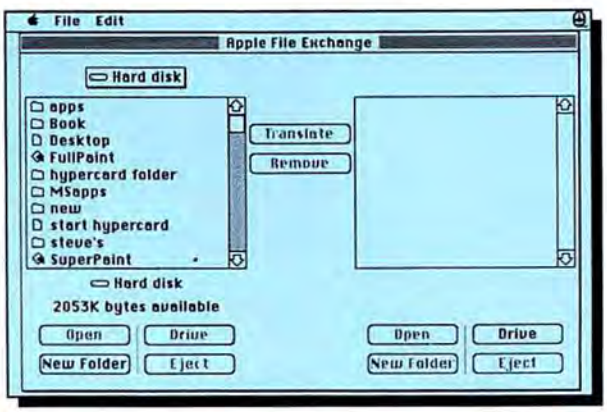
On the Mac side, Apple File Exchange and MacLink Plus support DCA, and TOPS and Dayna also use the MacLink Plus translators. These programs allow you to translate DCA files to MacWrite format and the other way around. Microsoft Word introduced DCA support on the Mac with Word 3.0 but required that you take the extra step of first saving the file in their RTF format and then running a separate DCA conversion program.

DCA is as close to a universal standard in formatted text as we are likely to get for a while. With IBM's backing, and with the support of many other manufacturers, it's entrenched in its position. However, DCA is showing its age. It does not include support for many features that Mac users take for granted, such as double underlining, multiple fonts in a document, and multiple font sizes on a line.

• **Microsoft RTF** (Rich Text Format). This is a new standard that Microsoft introduced in 1987 when they released Word 3.0. The RTF specification allows special code strings to be inserted into ASCII text files to specify formatting. RTF is very rich, supporting a wide range of formatting codes, such as fonts, font sizes, typestyles, and paragraph alignment. And because RTF is a text-only format, it has another significant advantage. Some programs use non-ASCII control codes to handle their formatting, but since these codes aren't ASCII characters, a non-RTF intermediate format might not be able to translate them. RTF solves this problem by re-



Trashing the box: In Word, you can see a DOS document's line feeds (the little boxes) by choosing Show ¶, and you can remove them by replacing ^10 , the ASCII code for a line feed, with nothing.



Apple File Exchange lists all the files on the source disk in the scrolling box on the left. The box on the right shows the contents of the translated files' destination disk.

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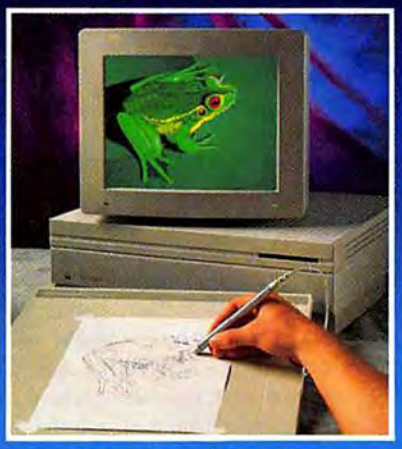
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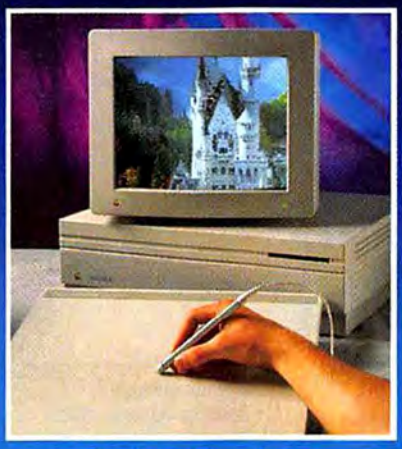
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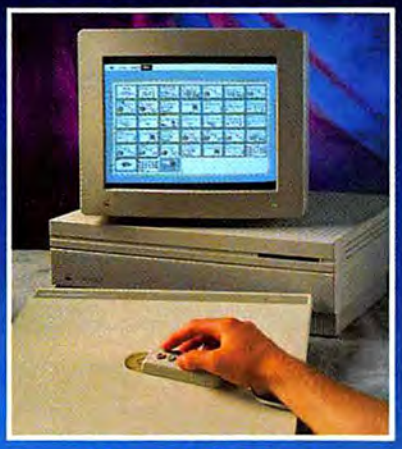
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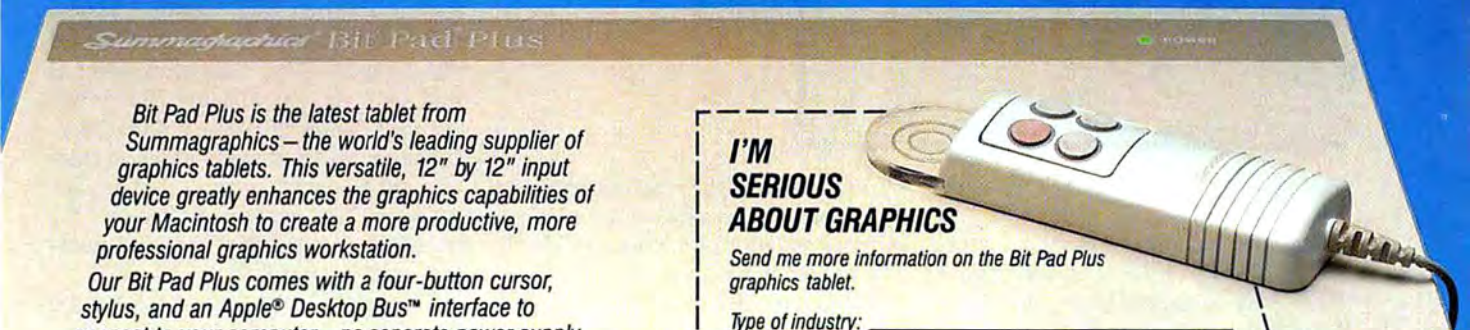


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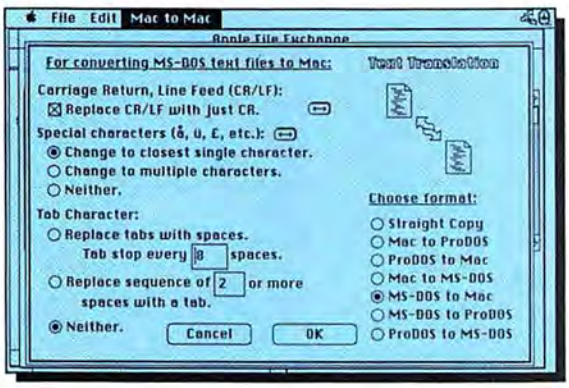
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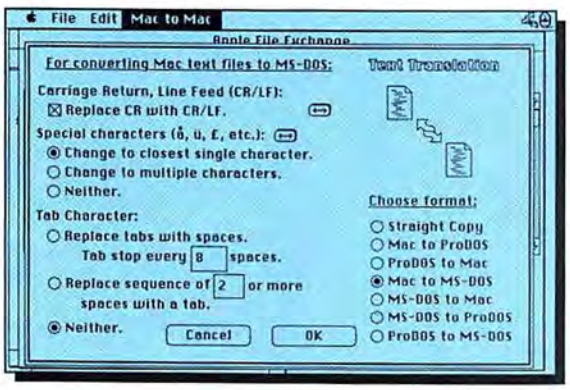
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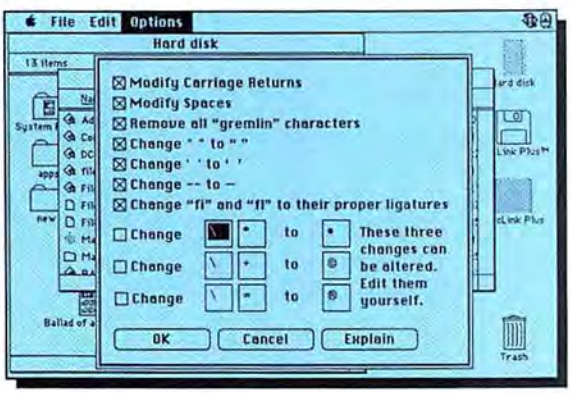
Images courtesy of: Pagemaker from Aldus Publishing, VersaCAD, Powerpoint from Microsoft, PixelPaint from SuperMac Technologies, True Vision and Apple Computer, Inc.



Specifying MS-DOS-to-Mac text translation with standard Apple File Exchange allows you to change carriage return/line-feed pairs into returns only, to translate special characters, and to change spaces into tabs.



Specifying Mac-to-MS-DOS text translation with standard Apple File Exchange lets you add line feeds to returns, translate special characters, and convert spaces into tabs.



MacIfy can modify carriage returns, which removes all returns not followed by a tab or return, and it can strip control characters, add smart quotes, and more.

placing these codes with ASCII characters.

However, as always, there are limitations to RTF. RTF is closely linked to the way in which Microsoft Word structures a document — in sections, paragraphs, and characters, and with support for style sheets. Software manufacturers who structure documents in different ways might have some trouble in adapting their schemes to RTF. Partly because RTF is so new and partly because of the way it was implemented, it's still too early to tell how widely RTF will be used for converting documents. But if you don't have translators that can convert your Word files to the native format of another application, you must use Microsoft's RTF to get to DCA.

• **WordStar**. Because WordStar has been in use for so long on the PC and earlier computers, people have created many documents in this format, allowing it to become something of a lingua franca for word processors. Many PC programs — Word, WordPerfect, and MultiMate, for example — include conversion utilities that translate to and from WordStar format. Since MacLink Plus supports translation from WordStar to MacWrite, you can then read the formatted file into most Mac word processors.

Of course, WordStar does not support a number of features offered by other PC word processors, let alone the wide range of font and style features supported by most Mac programs. This means that when you use WordStar as an intermediate format, chances are you're going to lose a significant amount of formatting.

• **MacWrite**. When Apple bundled MacWrite with the Mac, it ensured that MacWrite would become the WordStar for the Mac: a program that many people used and a file format that most other word processors could support. MacLink Plus can translate many different file formats into MacWrite, and Apple File Exchange supports translation from DCA to MacWrite. Most other Mac word processors can read MacWrite files, so it works as an intermediate format.

While MacWrite format certainly supports a range of features that neither DCA nor WordStar supports, it still has its limitations. Many other Mac word processors offer features that are not available with MacWrite but may be available with a word processor on the PC. Unfortunately, by translating into MacWrite format first, you'll probably lose these features.

• **ASCII** (American Standard Code for Information Interchange). This is the lowest common denominator of file compatibility. The good news is that both the PC and the Macintosh agree as to how the basic alphanumeric characters (and many other characters, such as returns and tabs) are encoded. This agreement works for transferring "straight" text and numbers without formatting.

The ASCII character set encodes every character you see on your screen as a number. The letter *A*, for example, is ASCII code 65 (1000001 in binary notation), and similar numeric equivalents are assigned to a number of "control" codes that computers use for their internal operations, the complete alphabet (uppercase and lowercase letters have different codes), common punctuation symbols, and numbers. The Macintosh and the PC agree

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on the meaning of codes 0 through 127.

However, things get sticky when it comes to other characters. Since ASCII was created in the days when computers encoded with 8 bits, only the numbers 0 through 127 were standardized. Modern computers can deal with higher values, so for the numbers 128 through 255 there's chaos regarding how the characters are encoded. Both the PC and the Mac use these for foreign and accented characters as well as for symbols, but even where they support the same symbols, they assign them different codes.



Also, the PC and the Mac don't quite agree regarding how an ASCII text file is structured. The PC was designed in the days when computers still dealt with their screens as if they were terminals, and this shows up in the way files are stored. The most obvious examples are returns and line feeds.

On teletype terminals, the return character and the line-feed character performed distinct functions. These terminals needed both of these characters to generate a new line; the carriage return (ASCII character 13) told the terminal to move the carriage to the beginning of the line, and the line feed (ASCII character 10) told the terminal to advance to the next line. DOS still needs both of these characters at the end of a line.



The Mac, however, doesn't owe much to teletype terminals, and its creators abandoned the need for line feeds in text files. So when you open a text file created on a DOS machine with a Mac application, you have some extraneous characters — the line feeds, which usually appear as little boxes. When you save a Mac text file to a DOS program, the converse holds true, and you have to add the line feeds. Fortunately, there are some fine and inexpensive tools that allow you to do this, and it isn't hard to delete the line feeds when using most Mac word processors. (See sidebar "Return, Return, Return.")

Some DOS word processors place a return at the end of every line when you save a text file. You then have to delete these extra returns when you open the file on your Mac — or use a

Moving Structures

Structured text adds a new level of complication to file transfer. Text files created with word processors can be seen as streams of text, the only structure being that a return ends a line. This works fine if all you want to transfer are word processor files, but spreadsheets and databases are another story. These kinds of files have definite structures: spreadsheets are composed of rows and columns, and databases are composed of records and fields. To transfer these files, both the program that writes the file and the one that reads it must agree on what constitutes a cell or field and what constitutes a row or record. There are three ways to transfer these kinds of files while retaining their structures.

WHAT'S THE DIF?

DIF (Data Interchange Format) is a text format that allows structured text to be exchanged between database and spreadsheet programs. This format, developed by the creators of VisiCalc, has been around for some time, and many spreadsheets and databases in both the Mac and PC worlds support it, including Excel, 4th Dimension, Omnis 3 Plus, FileMaker Plus, dBASE III PLUS, and Lotus 1-2-3.

SMOOTH AS SYLK

Microsoft developed SYLK (Symbolic Link) for communication between MultiPlan and other products. Like DIF, SYLK is supported by a wide variety of programs, including Excel, 4th Dimension, Omnis 3 Plus, FileMaker Plus, and dBASE III PLUS. Additionally, SYLK can be extended by developers who want to incorporate special features of their programs.

SYLK MAKES THE BIG DIFFERENCE

If you're using applications that support both SYLK and DIF, you can rest assured that both will transfer your structured text. However, SYLK is a newer format specification and has more flexibility than DIF. It is extensible, so manufacturers can add their own codes to the file to support types of information that weren't part of the original specification. SYLK also makes it possible to transfer not just values but also the formulas that created those values. Unfortunately, not many manufacturers do this with SYLK, but who knows, you might be lucky. If you have a choice, use SYLK. It's a little faster than DIF and at least has the potential for transfer of more detailed information than DIF does.

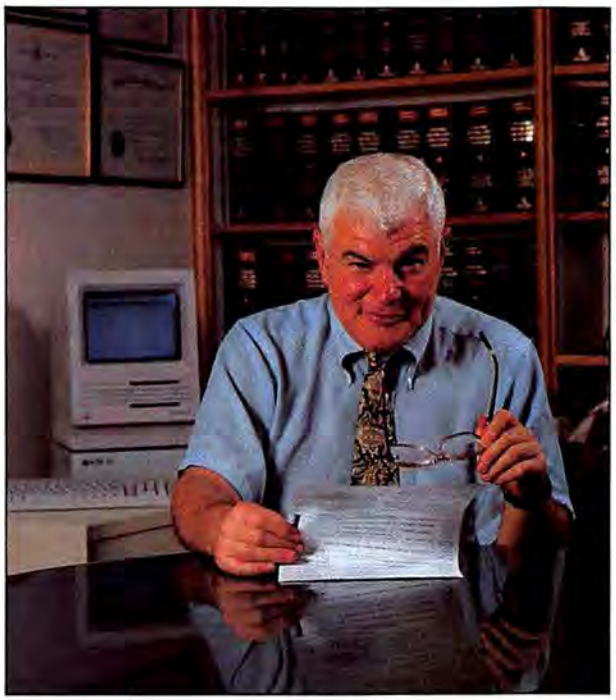
IT'S D'LIMITED

If your programs don't support SYLK or DIF, there is another layer of compatibility for structured files: the delimited file formats. Just as ASCII text is the lowest common denominator for word processing files, so these delimited file formats are the bottom line for structured text. These formats solve the compatibility problem by inserting a character or group of characters between fields to separate them from one another. These delimiting characters tell the program reading the file where one field or cell ends and another begins. The reading program also needs to know where a record or row ends and the next one begins. There are two common delimited formats in wide use.

- Tab-Delimited. This is the most common Mac format. When a database writes a tab-delimited file, it writes a field, then a tab, then another field followed by a tab, and so on. A return denotes the end of a record. Spreadsheets work much the same way: The program starts at the upper-left corner of the spreadsheet and works its way across a row and then down. It writes a cell, then a tab, then another cell followed by a tab, and so on until it reaches the end of the row. A return indicates the end of the row. Since this format is so common on the Mac and is widely used on the PC, it will almost always work. This is useful for bringing structured data into a columnar layout in a word processor or desktop publishing application.
- Comma-Delimited. More common on the PC than on the Mac, the comma-delimited format is a nuisance. Instead of using tabs to separate fields or cells, it uses a comma. The problem is obvious: The data can itself contain commas (for example, "John Doe, Jr." or "$1,234.50"). When using this delimiter, you must put quotes around those fields that have embedded commas to indicate to the program reading the file that this is one field, not two. The program reading the file should then discard the quotes so that they do not appear as part of the data. Unfortunately, not all programs do so. I've seen Double Helix retain the quotes in a file after it has read them in. Given a choice, use the tab-delimited format instead.

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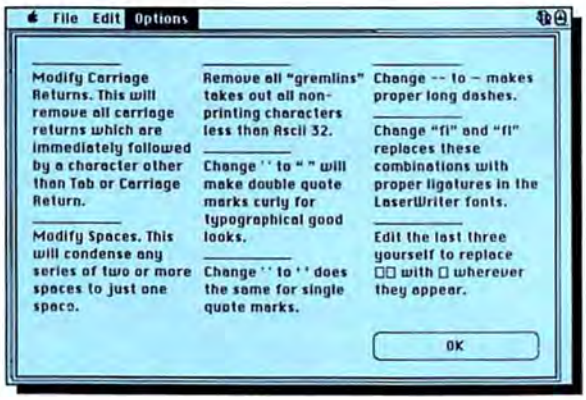
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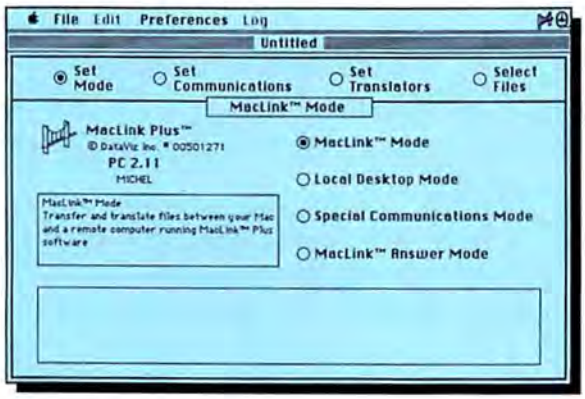
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MacLink Plus can work in several modes: through a modem, with files on the local desktop, or with a direct serial connection.

translator to do it for you. Other word processors, such as WordPerfect for the PC, give you choices when saving your file. Saving in WordPerfect's "generic word processor" format, for example, puts returns and line feeds only at the end of paragraphs — just where you want them. Saving as a "DOS text file" puts returns and line feeds at the end of every line.

GETTING THE RIGHT TOOLS

Because not all programs can read or write all pivot files, and because there are only a limited number of conversions that we can expect any one program to handle, some software developers have come up with tools that can be used for a wide variety of translations.

• **MacLink Plus.** MacLink Plus, from DataViz, is the granddaddy of file translation programs. It's a multipurpose tool that you can use both for translation and for handling the movement of files between the two systems over a direct connection or a modem. (See "Connect the DOS" elsewhere in this issue.) You can also use MacLink Plus in a "local desktop" mode if the files have already been moved, or if the Mac can access the files on a disk, such as a Mac disk, the DaynaFile, or a file server. Dayna makes the translation portion of MacLink Plus available for the DaynaFile, and TOPS includes MacLink Plus with their software as TOPS Translators, proving the success of this file-translation program.

A new version of MacLink Plus (version 2.1) was released this spring and adds a number of new features. If you want to use this program to actually copy the files between the two machines, you'll be happy to know that it now supports 57K-baud file transfers between machines that are directly connected. This is fast file transfer and rivals the speed of AppleTalk networks in file throughput.

Another nice feature of the new MacLink Plus is that the translator drivers have been separated from the program and have been made compatible with Apple File Exchange. In effect, this allows MacLink Plus owners to choose the user interface they like best and to use just one program. Since you can save translation sets with both programs, the functionality is about the same, but by the time you read this, Apple File Exchange will include all the MacLink translators, giving it an edge.

> Because all Mac owners now get AFE, it can be a lingua franca for file translation.

• **AnyText.** This program takes a unique approach to translating DOS text to the Macintosh. The program does not read disk files at all, so it does not need to be intelligent about all the different ways that programs store text on disk. Instead, it acts as an Epson Printer, which is as standard as anything gets in the DOS world. When loaded, the software resides in RAM, waiting for other programs to send output to the printer connected to the parallel port. When it detects information going to that port, AnyText "captures" those characters and saves them into a file on disk that you can then translate into MacWrite or Microsoft Word format using Apple File Exchange.

Because virtually every program supports the Epson printer, AnyText is able to translate from virtually any PC program to the Mac. And because it's intelligent about the codes that are sent to the Epson printer to do such things as set margins or make text bold or underlined, it does a nice job of approximating that output on the Mac.

If you're using some of the more obscure PC programs that use a proprietary file format and lack conversion utilities, this program is definitely the way to go. It's inexpensive and unobtrusive, and it works fine.

• **Apple File Exchange.** Apple released Apple File Exchange (AFE) in October 1987, and it's included as part of the Mac system software. This extensible program provides a consistent

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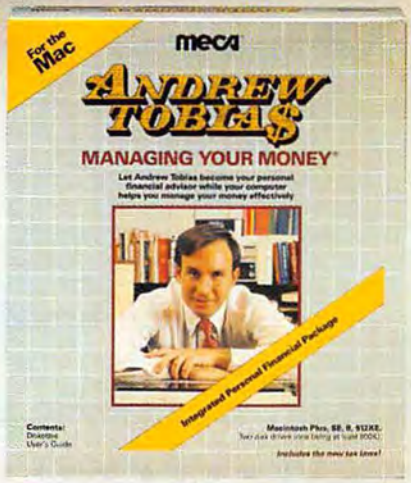
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user interface and a standard program for translating files.

At this writing, Apple ships this program with only a couple of translation options (after August, all the MacLink translators will be included). It can translate between DCA and MacWrite formats, and it can translate text files between the two systems.

When translating files from Mac to DOS, AFE will convert between carriage returns and carriage return/linefeed combinations and between spaces and tabs. You can also specify the number of spaces you want converted to tabs. Another nice feature is AFE's ability to translate international characters. On the PC, many of these characters, such as the *A* with the umlaut, are formed by printing one character, backspacing, and printing another. AFE allows you to specify whether you want it to convert these characters to the closest character that resembles the one in question or to convert to two separate characters.

However, AFE's main strength is in its extensibility. Translators are kept in separate files, called "drivers," that are automatically added to AFE when copied into the same folder as AFE itself. This should allow developers greater leeway in providing translation between their programs and others. Although DataViz has grabbed the spotlight for the moment — and will probably remain the single source for a comprehensive set of AFE-compatible translators — developers may soon begin shipping translators for their programs as a standard utility. Because all Mac owners now get AFE, it can be a lingua franca for file translation.

Return, Return, Return

In some cases, opening a text file on your Mac can be just the start of your adventure in compatibility. Often, that document will open with carriage returns at the end of every line instead of every paragraph. Fortunately, there are a couple of ways that you can remove these excess returns, other than one at a time.

MacIfy has a feature called "Modify carriage returns" that removes all carriage returns not immediately followed by other carriage returns or tabs. This is quick and easy.

If you're using Microsoft Word, you can get the same result without using another program, but it takes a few steps.

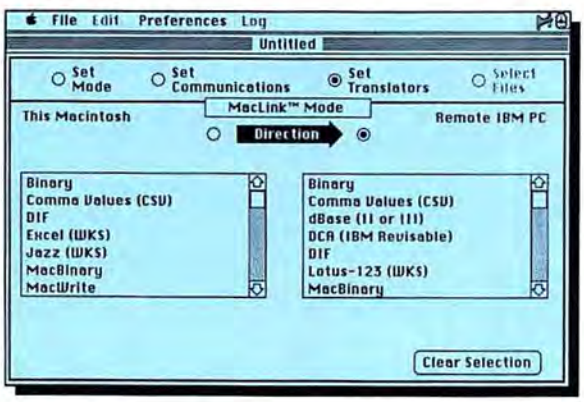
First, choose Show ¶ from the Edit menu and look through the text to make sure that the paragraphs end with two returns. They usually do.

Next, change all instances of two returns in a row to another set of characters. I use *zzzz*, since this would only very rarely occur in text. To do this, type *^p^p* into the Find What field in the Change dialog box, and type *zzzz* into the Change To field. Click Change All, and you've finished the first step.

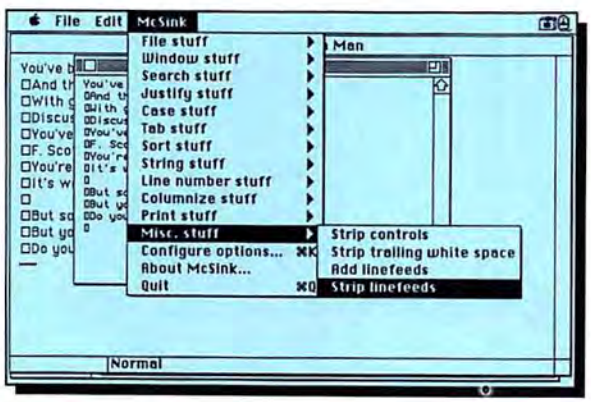
Now search for all the instances of single carriage returns and replace them with nothing — this deletes them. Enter *^p* into the Find What field, and leave the Change To field blank. Click Change All, and that's the second step done.

Your document now consists of one long paragraph, with *zzzz* indicating where the paragraph breaks should be. Use the Change command to replace all the instances of *zzzz* with *^p*, and you're finished. Your document will now have returns at the end of paragraphs and none at the end of individual lines.

The process will work in much the same way if you're using a word processor other than Word, but you'll probably have to use another means to search for returns. For example, you can select the space from the end of one line to the beginning of the next and paste this selection into the Find field, or you can actually type returns in the Find field.



When translating files with MacLink, you specify the type of file you are reading in the scrolling box on the left. The formats into which MacLink can translate are shown in the scrolling box on the right.



Sink but not sunk. McSink is a kitchen-sinkful of text file utilities. Adding and stripping line feeds are two of its handier features.

- **McSink.** This program, from Signature Software, is a kitchen-sinkful of text file utilities. Among its capabilities are easily adding or removing line feeds and converting spaces to tabs and tabs to spaces. Because some word processors on the PC (notably WordStar) do not embed a tab character when you type the tab key, instead inserting a number of spaces, this is very handy. McSink is a $25 shareware product and performs a wide variety of functions. It's a tool that should be in everyone's desk accessory menu.

XPress Yourself!

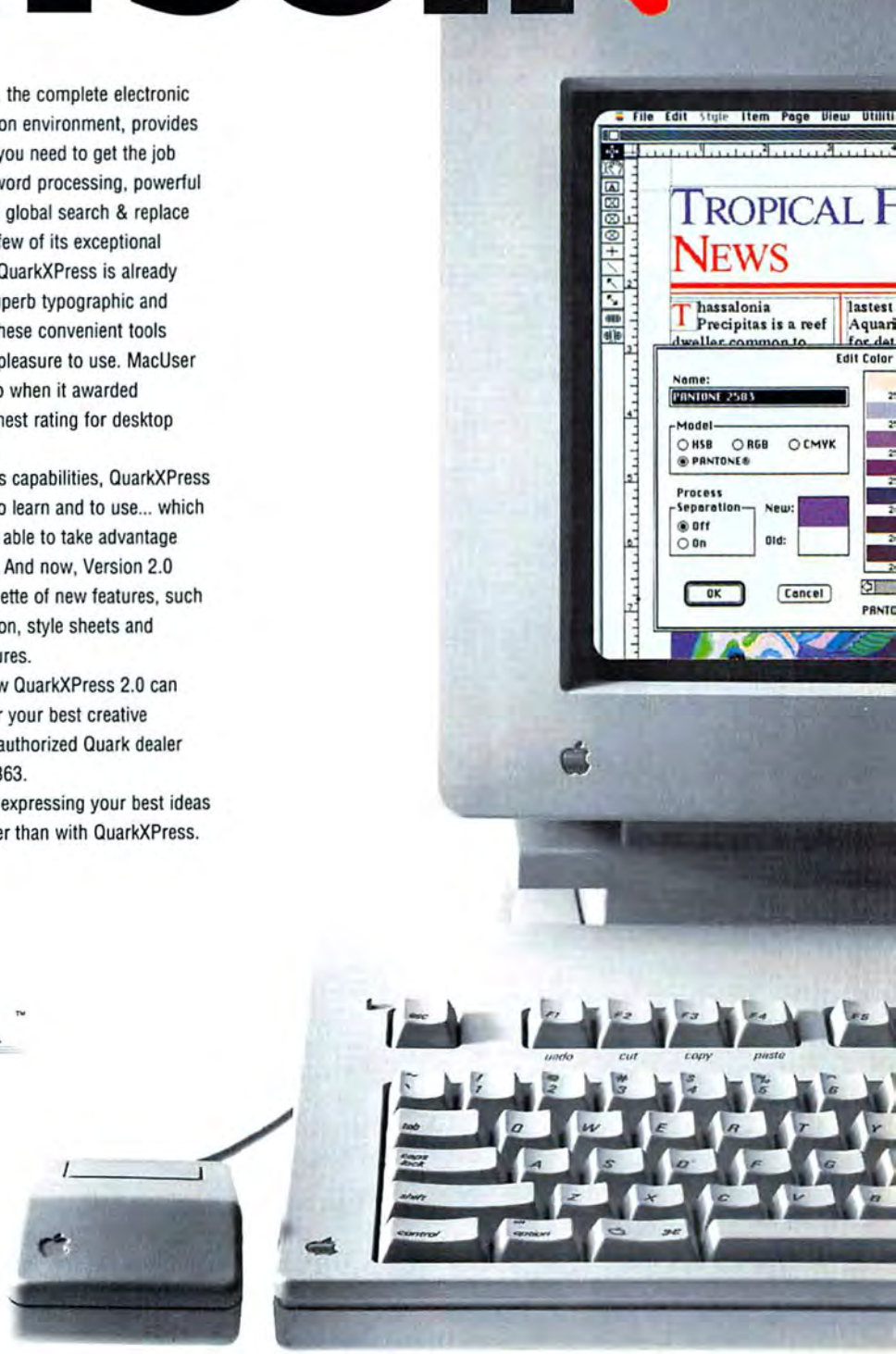
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• **MacIfy**. This is a standard application that performs a number of the same functions as McSink. It also translates typewriter quotes into typesetter's quotes ("smart quotes") and lets you type in custom character strings to be translated globally — something like a search-and-replace mode in a word processor.

• **Word Processors**. You can also use most word processors to do some work with text files that you've brought over from a PC. If all you need to do is delete line feeds from a DOS file or add line feeds to a Mac file that you are sending to DOS, it's not too hard.

In MacWrite, you can paste into the Change dialog box. Just select the little box that represents the line feed (the small box is used on the Mac to show characters that don't have any printable symbols) and copy it. Then bring up the Change dialog box. Ensure that the cursor is in the Find What field in that dialog, then select Paste from the Edit menu. The small box will appear in the Find What field. Leave the Change To field empty. What you want to do is find all the line feeds and change them to nothing.

You can't paste into Word's Change dialog box, but you can search for specific ASCII characters. Word uses the character to permit you to search for codes and characters that you can't type from the keyboard. Since the line-feed character is ASCII 10, you can search for it by typing^10 into the Find What field in the Change dialog box. Leave the Change To field empty and it does the same thing.

Other word processors and text editors allow you to do much the same thing. In WordPerfect on the Mac, you can scroll through a list of "codes" to put the line-feed code into the Find What dialog.

Of course, if you are using WordPerfect Mac to read in files created by WordPerfect PC, you don't need to do this sort of massaging. QUED/M also has some sophisticated tools for searching and replacing.

TWO-WAY TRAFFIC AHEAD

Moving files back and forth between the Mac and the PC is getting easier by the day. More and more programs are coming out for both machines, allowing direct file transfer. If you're using programs that don't have direct counterparts, it takes a little more work, but it can be done. If you find yourself doing a lot of this sort of thing, the utilities mentioned will be good armaments in your arsenal. And if all else fails, straight ASCII text can carry much of the typing over, if not the formatting. With all the tools available to you, you should be able to handle just about any situation and break out from under that glass forever.

STEVE MICHEL IS THE AUTHOR OF IBM PC AND MACINTOSH NETWORKING (HOWARD W. SAMS), FROM WHICH THIS ARTICLE IS ADAPTED. HE IS ALSO THE AUTHOR OF PORT AUTHORITY, A STACK AVAILABLE FROM HEIZER SOFTWARE.

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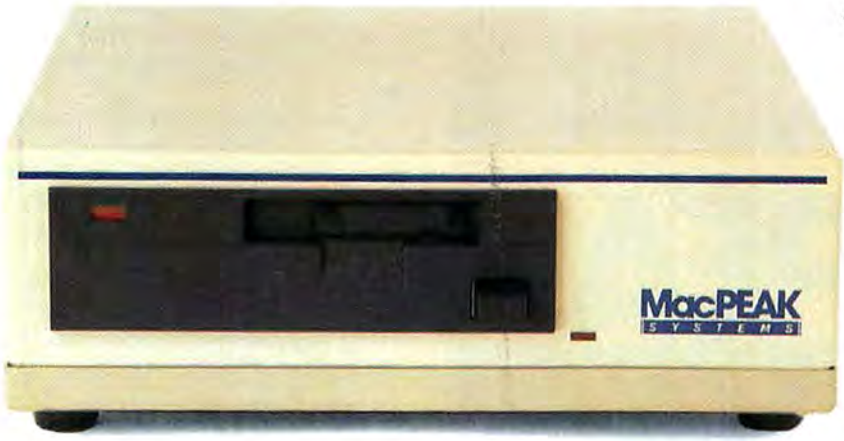
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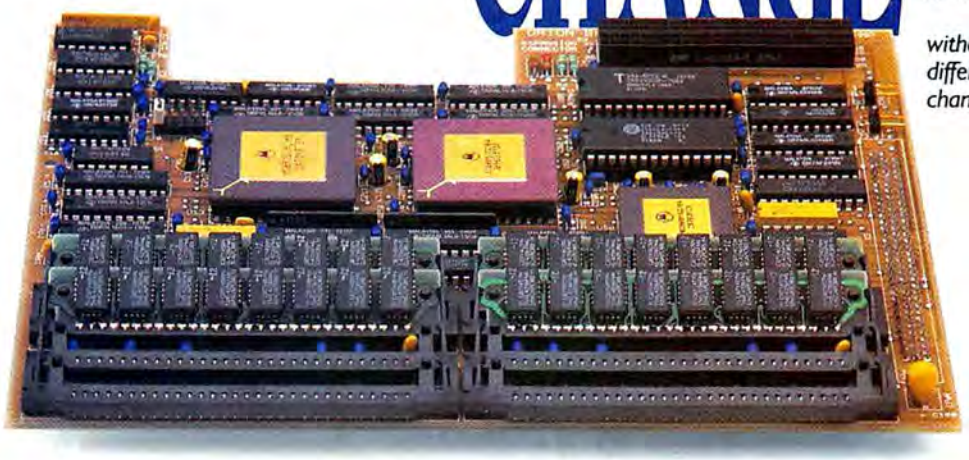
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Moving Pictures

It takes more than a cut and a paste to transfer graphics from Macs to PCs. Here's a road map to get you from here to there.

People in the Mac world are spoiled, right? They create graphics with a variety of programs, move them around almost effortlessly from program to program, place them on pages, scale them, rotate them, print them, all with a click here and a drag there. Right?

Well, things aren't always so wonderful. I've seen PICT images land on pages looking as if they had taken a side-trip through Pablo Picasso's right brain. Some PostScript images turn up on-screen showing nothing but a gray box on the page. Sometimes the image prints, but not where you wanted it! Shades of MS-DOS.

Speaking of the PC, that's where things get really tricky. What about transferring MacPaint documents to an IBM? Ventura reads them just fine. But what about PageMaker on the PC? What about that incredible AutoCAD drawing that engineering created last month on the IBM? It would make a great front cover for the user manual, but that's on the Mac. It's hard to justify the cost of another scanner when you already have one, even though it only works with the IBM. Isn't there some way to scan over there, then use the images over here?

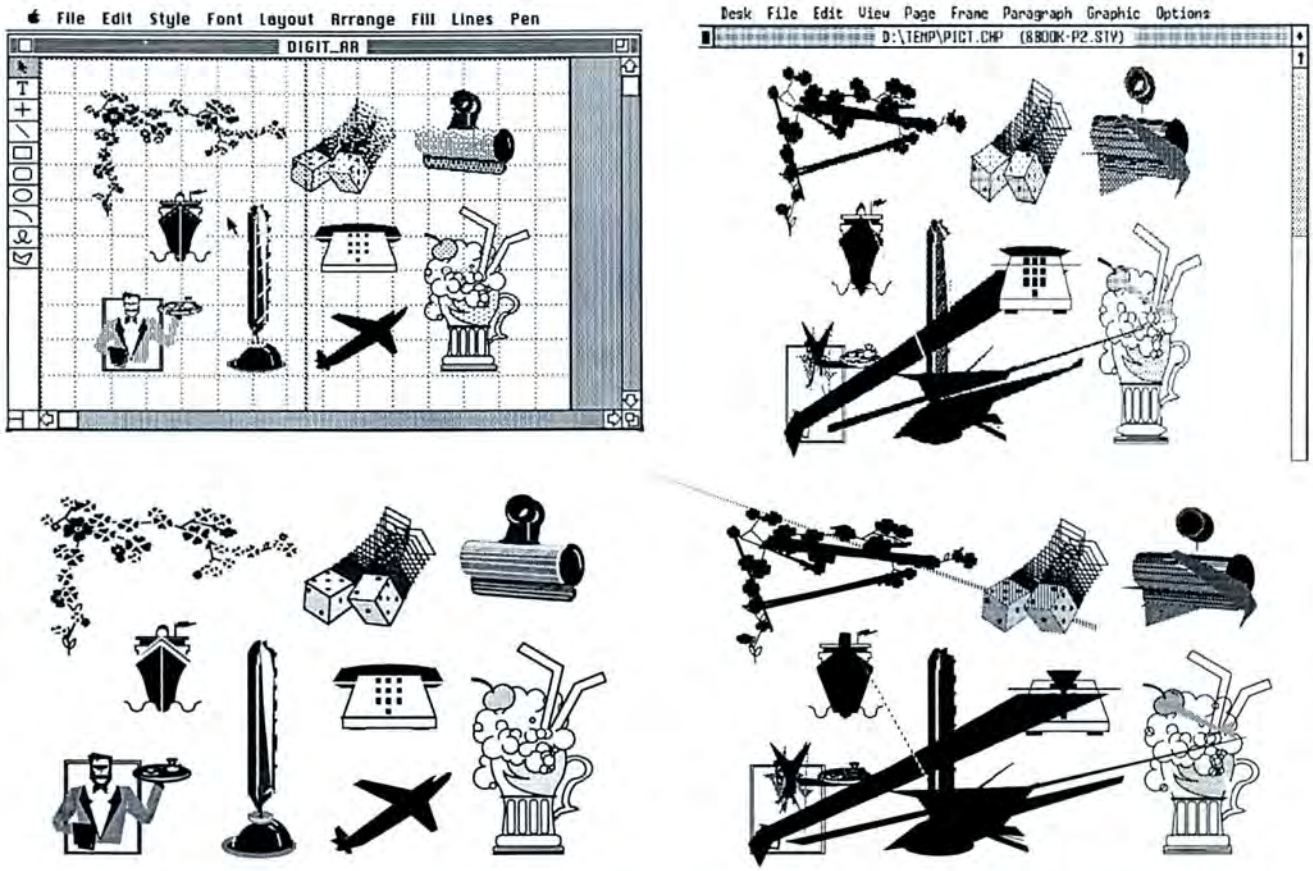
There are lots of reasons why you might want to move graphic files from the PC to the Macintosh. Illustrator and FreeHand are about the best inexpensive illustrator's tools on the market (though Windows Designer on the IBM is pretty impressive). Show me a professional illustrator who works on a computer and, eight out of ten times, I'll show you an Illustrator user. There are an awful lot of images stuck on the IBM, though, destined for dot-matrix oblivion, that dream of being Illustrator-ized. If only you could move them over, even just a rough approximation, it would be a lot easier to trace them in Illustrator or FreeHand on the Mac.

There's another reason why IBM-to-Macintosh graphics conversion is important: computer-aided design (CAD). Not many design engineers work on Macintosh systems — yet. The Mac is making big inroads in CAD, and the arrival of Autodesk's Mac version of AutoCAD (due out by the time you read this) will further enhance the Mac's role in CAD. Designers who decide it's time to switch platforms will need an easy way to convert their libraries of CAD documents into Mac-usable formats.

And if you had a way to move files in

BY STEVE ROTH





Although Ventura Publisher can place PICT images directly, it doesn't always do so with complete success. The top two figures show some PICT clip art as displayed on-screen and printed with MacDraw; the bottom two show the same file as displayed and printed with Ventura.

the other direction — from Mac to PC — you could share your output with the blue masses. And you could also use your Mac graphics and text files with those few PC applications that have no peers on the Mac. For long documents, the best WYSIWYG layout program — Ventura Publisher — is available only on the PC. Really and truly, nothing else — on the Macintosh or the IBM — begins to compare to this wonder. It has automatic document formatting features that the Macintosh still only dreams of, great typographics, built-in graphics tools, and an interface that packs a lot into a little space without getting cluttered. It doesn't give you the reach-out-and-touch-it, warm-all-over feeling that you get from the Mac, but it is slick, elegant, and eminently capable. Since it can use Macintosh PICT, paint, and EPS graphics, it's ready and waiting for all those images stashed away on your hard disk — almost.

THERE AND BACK AGAIN

Moving graphics files from platform A to platform B introduces a slew of variables: bit-mapped versus object-oriented graphics, color and gray scales, object attributes, type specs, and file headers. Let's start mapping the possible routes from A to B by reviewing the basic distinction between graphic file types: bit-mapped versus object-oriented. You probably know this already, but there's more to it than you might think.

Bit-mapped files are made up of dots; you create them with paint programs and scanners. Object-oriented images are made up of — you guessed it — objects: squares, circles, and complex paths composed of curves, lines, tangent points, and other mythical entities. You create object-oriented images with drawing and CAD programs and with some of the new tools that will automatically trace the outlines of bit-mapped images. An object-oriented file format can also contain a bit-mapped image as an object in its own right. Bit-mapped files, however, cannot contain objects. When you paste an object into a bit-mapped program, you get a bunch of dots, not an object. Some programs (SuperPaint is a good example) let you work with bit maps and objects on separate layers.

This apparently simple distinction between bit maps and objects goes a bit further. The dots in a bit-mapped image and the objects in an object-oriented drawing have attributes — personalities, if you like. Different file formats have different capacities for storing attribute information, and programs vary in their abilities to interpret the information provided.

With bit-mapped files, for instance, there is the question of color and gray scale. While the good old paint file format that we all know and love handles only black and white dots, there are file formats and bit-map-editing pro-

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grams that handle more robust bit maps. I call them deep bit maps, because each pixel has a color or gray-scale value hiding behind it. Like colorful personalities, these images have depth.

As long as we're talking about depth, let's not forget width and height. Paint files are limited to 576 by 720 dots. Other bit-mapped file formats (notably TIFF, and .PCX on the IBM) used by other programs can handle much larger images.

Because different file formats and programs handle size, color, and gray-scale information differently, there are still some iffy questions when it comes to moving deep bit maps between different hardware platforms and software packages.

With object-oriented images, the number of possible object attributes is seemingly infinite: line widths, fills (including patterns, gray tints, and colors), rounded-corner radii, drawing layers, type specs (including various methods of kerning and letterspacing), rotation, and provisions for bit maps (flat or deep) to be included as objects. There is not currently a universal file format robust enough to handle all that information, which means that moving complex drawings in editable form between various programs is still more of an art than a science.

Enough conceptual background; let's talk about some of the widely used file formats out there and how useful they are for moving graphics among different applications.

BITS AND PIECES

The paint file format — 576 by 720 pixels, black and white — is the easiest format for both Macs and PCs to come to terms with. Just about any graphics program on the Mac will read it, and a few on the IBM will too. The problem is that paint-format graphics won't exactly be of top quality. Even the best MacPaint images (and there are some great clip art packages) still generally look bit-mapped.

But even in this high-resolution day and age, paint files have their functions. You might want to move a screen image over from the IBM to use as a template for retracing in a Mac graphics program. Or suppose you want a rough image to place in Ventura, just to remind you where the high-quality Illustrator-generated image will go.

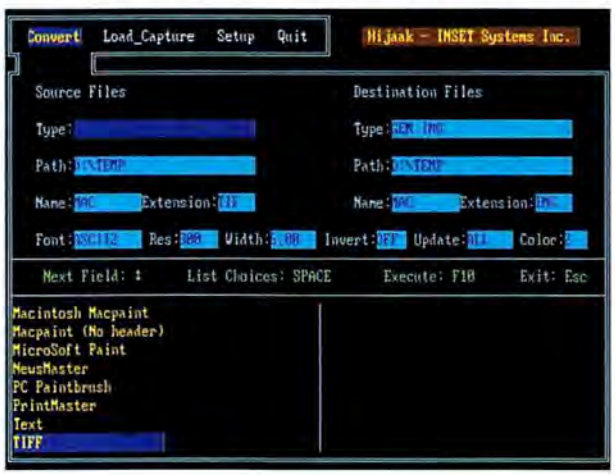
Ventura is actually an easy case — it can convert paint files directly to GEM .IMG bit-mapped format. (Ventura runs under the Graphics Environment Manager, whose native bit-mapped format is .IMG.) The original paint file is left alone. Most other PC programs make life more complicated. Amazingly, you could not place paint images in version 1.0a of PC PageMaker, even though MacPaint appeared as an option in the Place dialog. Version 3.0 for the PC fixes this. No other IBM application I know of will read paint files — you'll need to use a conversion utility.

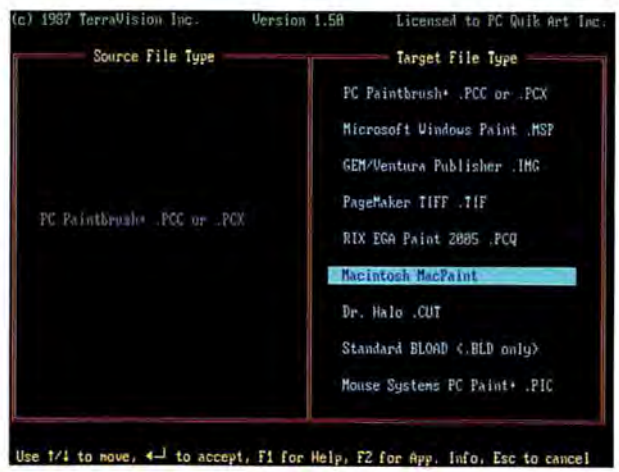
RAW BITS

AnyGraph, from Compatible Systems, can convert just about any graphic on the IBM to paint format, and only paint format. AnyGraph is actually two programs. The first program, AnyPC, is a memory-resident PC program that captures output sent to an IBM Graphics Printer to disk. Once you transfer that file to your Mac, you can convert it using Apple File Exchange in combination with the AnyGraph translator.

This is a bare-bones approach to translation, because it's limited to the approximately 80 dpi that the IBM Graphics Printer can handle and the small image size that MacPaint can handle. On the other hand, these limitations make AnyGraph an easy-to-use program.

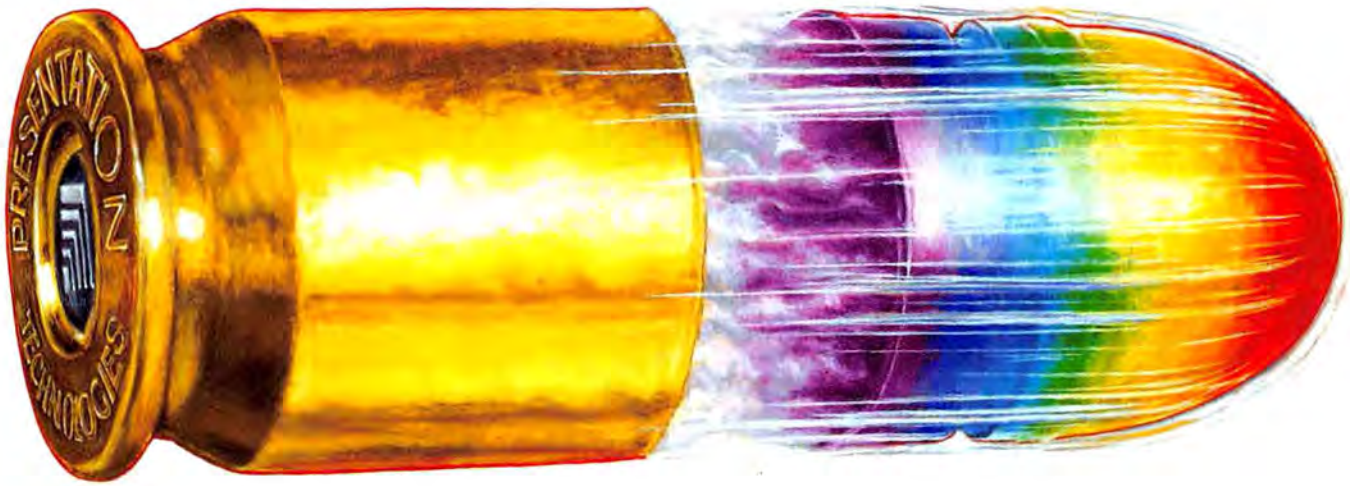
For more flexibility on the PC, there are two more utilities you might consider. One goes by the name of The Graphics Link, from PC Quik Art. The other is Hijaak, from Inset Systems (also published as Reflection, by IMSI). Both of these translate to and





Hijaak and The Graphics Link both offer conversions between a number of formats. Hijaak offers a wider variety and better color-to-gray conversion, but The Graphics Link lets you view the images and tag several for conversion at once.

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from a variety of bit-mapped formats for the PC.

Both programs can convert files in paint, black-and-white .TIF, Paintbrush .PCC and .PCX files, Microsoft Windows Paint (MSP), GEDM .IMG, and Halo CUT formats. The Graphics Link can also handle EGA Paint, PC Paint, and BLOAD (the old IBM BASIC graphic format). Hijaak can convert documents in all of these formats: Amiga ILBM, CompuServe .GIF, Hewlett-Packard .PCL, Inset .PIX, Lotus .PIC (source only), Newsmaster/Printmaster, Text, and PostScript (destination only). (Several of these IBM bit-mapped formats will be discussed later on.)

Of the two programs, I like Hijaak better, because it converts more formats and does a better job in some cases. The Graphics Link is much faster, however, and it lets you tag a bunch of files to be converted at once. You can even view the files quickly while you're tagging, to make sure you get the ones you want. Hijaak makes you choose each file by name, wait for it to convert, then choose the next, and so on (sounds just like the Macintosh). You can call Hijaak from the DOS command line, though, so if you're into writing batch files (not that hard, really), you can convert multiple files at once.

Hijaak stands out when it comes to diversity, especially since it will read Lotus .PIC files (an object-oriented format) and convert them to bit maps. .PCL, the language of the Hewlett-Packard LaserJet, is another very useful format. When you print a file to disk using a LaserJet driver, what results is a high-resolution (300-dpi) bit map of whatever is on the page. Hijaak will convert that high-res bit map to any of its supported formats, including .TIF. Even object-oriented graphics are converted, since objects are sent to the LaserJet as bit maps. (The LaserJet doesn't have any graphic primitives to speak of.) A few LaserJet drivers — notably Ventura's — wouldn't convert, however.

This conversion still results in a bit map, not an object-oriented graphic, but it's a high-resolution bit map that may be sufficient. Unfortunately, this conversion only works for graphics. Any text that depends on LaserJet fonts won't be converted.

Hijaak also stands out when converting color files; it does a good job of mapping the colors to gray patterns for either TIFF or paint formats. The Graphics Link generally gave me garbage when I converted color files. Also, bear in mind that even Hijaak converts only to gray patterns, not actual gray values. Neither program supports gray-scale TIFF or EPS. Hijaak can convert to EPS, though it doesn't provide a screen representation.

Both Hijaak and The Graphics Link are easy to use. You just select the source and target formats from menus, specify your source and target file names, and go. The Graphics Link converts a paint-sized image in about 10 seconds; Hijaak takes about 30 (this on a 10-megahertz PC AT). With both programs, you have the option to reverse the image as it's converted. (IBM files are often white on black, because the screen is green on black.)

The Graphics Link lets you select horizontal and vertical scale factors, whereas Hijaak lets you change scales only when converting to or from an object-oriented format. When you convert to paint format, with its limited image size, The Graphics Link gives you the option of automatically scaling oversized images down to fit. Otherwise, it crops them on the right and/or bottom. Hijaak scales these files automatically, fitting the image to a full paint page.

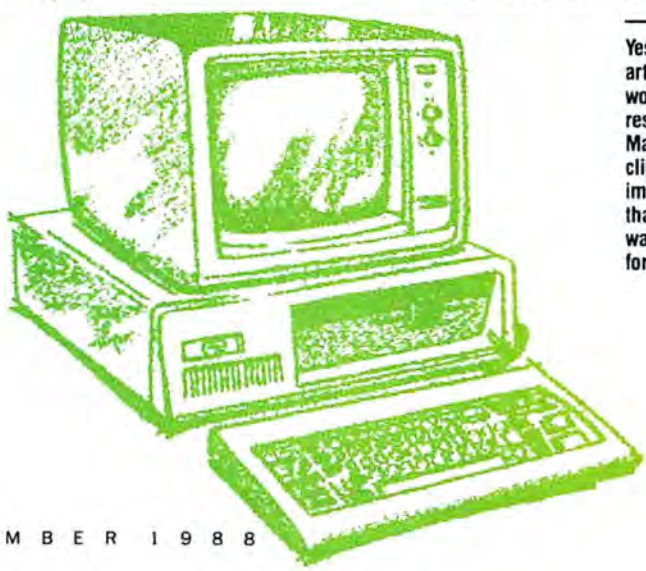
Both programs let you specify whether or not paint output files should include MacBinary headers. When this header is included in a file, it can be moved over to the Mac with the file's name, type, and creator properly identified. When you have a header, however, how you transfer files from PC to Mac makes a big difference. If you use a method that supports MacBinary, the file and header information comes across correctly. But if you copy or access the file using TOPS or MacLink, for example, an additional header gets appended on the way over. The result is a paint file that appears blank in both MacPaint and DeskPaint, crashes Canvas or PageMaker, and comes into SuperPaint with the whole image shifted to the left.

The moral: When converting to paint, try it with and without the header. One way or the other, it should work out OK.

You may still have to change the file "Type" before your paint or pagemakeup program will recognize it. There are a lot of tools that let you do this; my favorite is DiskTop. First, make sure your user level (set in the Preferences dialog box) is set for Technical. Then just select the file or files, type Command-I (or Get Info from the menu), and change the file type (for example, PNTG for MacPaint files or TIFF for TIFF files).

IN A TIFF

Tagged Image File Format (TIFF) is a much more versatile bit-mapped



Yes, Virginia, there is clip art available in the IBM world, often of higher resolution than Macintosh bit-mapped clip art. This PC Quik-Art image started out larger than a full paint page and was converted to paint format using Hijaak.



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format and, as you might expect, is subject to more subtle conversion problems and pitfalls. (In general, the richer the file format, the more there is to be lost in the translation.) Scanner software developers have adopted TIFF wholeheartedly, and as more paint programs begin to support it, it's looking more and more like the All-American Bit-Mapped Format. TIFF is the perfect vehicle if you want to move scanned images and other bit maps between different platforms and programs. It's being adopted on many different machines, including the IBM and the Mac.

Why is TIFF so hot? Versatility, for starters. It can handle bit maps with or without color or gray scale and can support different resolutions and sizes. It can also compress the bit maps, and you can even have two bit maps in one file — a high-resolution version for printing and a low-resolution version for fast screen display.

The problem is that TIFF is extensible; developers can (and often do) choose to create a TIFF file that no other program can read. Even on the Mac, there are several TIFF formats. Datacopy's MacImage scanning software, for instance, has three different TIFF formats (excuse the repetitive redundancy). And most Macintosh TIFF files are different from the .TIF files common on the IBM.

One Mac utility I've found useful for working with TIFF files is .tif to tiff, which is bundled with DeskPaint from Zedcor. It converts the .TIF files (black-and-white only) created by IBM programs like Hewlett-Packard's Scanning Gallery to Macintosh TIFF files, but it's not perfect.

ImageStudio can also read a variety of TIFF files and save them in a widely usable format. PageMaker (on both the Mac and PC) stands out as about the best program for reading a variety of TIFF formats, but it can save files in only one TIFF format.

On the IBM, TIFF support is only beginning to emerge. Most IBM scanners can save in TIFF format, but PageMaker is the only program I know of that can place the files on a page. Ventura doesn't even know that TIFF files exist, though that will probably change with version 2.0, due in the fall. That version will probably support black-and-white, gray-scale, and even color TIFF files. (The Ventura people are extremely tight-lipped, however.) You'd think that converting a Mac TIFF file to .IMG format would let you place the image on a Ventura page. Neither of the conversion programs I've worked with, however, has succeeded in reading any Macintosh TIFF file. So much for that.

TIFF is a robust format, but it's not a universal standard, by a long shot. Color TIFF could emerge as a standard for color bit-mapped images. But the only program I know of that works with color TIFF files is XPress, and it can only read them, not write them.

CHAMPING AT THE BIT

.TIF is making some headway in the IBM world, especially as a scanner file format on the IBM. But .PCX — the format native to Z-Soft's Paintbrush family of products — remains the dominant bit-mapped format for paint-generated color and black-and-white bit maps on the IBM.

Files in .PCX format can include color and gray-scale information and can be very large. Just about every bit-mapped program on the IBM can read and/or write .PCX files, and all the leading PC page-makeup programs can place .PCX files. Some IBM scanning programs also save in this format, although I don't expect to see them being used for color or gray-scale scan files.

ANY COLOR, AS LONG AS IT'S BLACK

If you want to move color bit maps from machine to machine, you're out of luck for the moment. Conversion decolorizes the color bit, changing colors to gray levels, gray patterns (that attempt to simulate color), or to black-and-white (mapping some colors to black and others to white). Where is Ted Turner when you need him?

Scaling is another factor to consider when converting bit maps. If you are converting a large file to paint format, for instance, you'll have to either scale it down or crop it. Scaling bit maps can result in a noticeable loss of quality (especially when you increase the scale). Even with simple little bit-mapped files, the path to successful conversion is not paved with velvet gloves (as long as we're mixing file formats, why not metaphors?). But with the right tools at your disposal, it can usually be done, even if getting them all to work together can be a trick.

PICT PACT

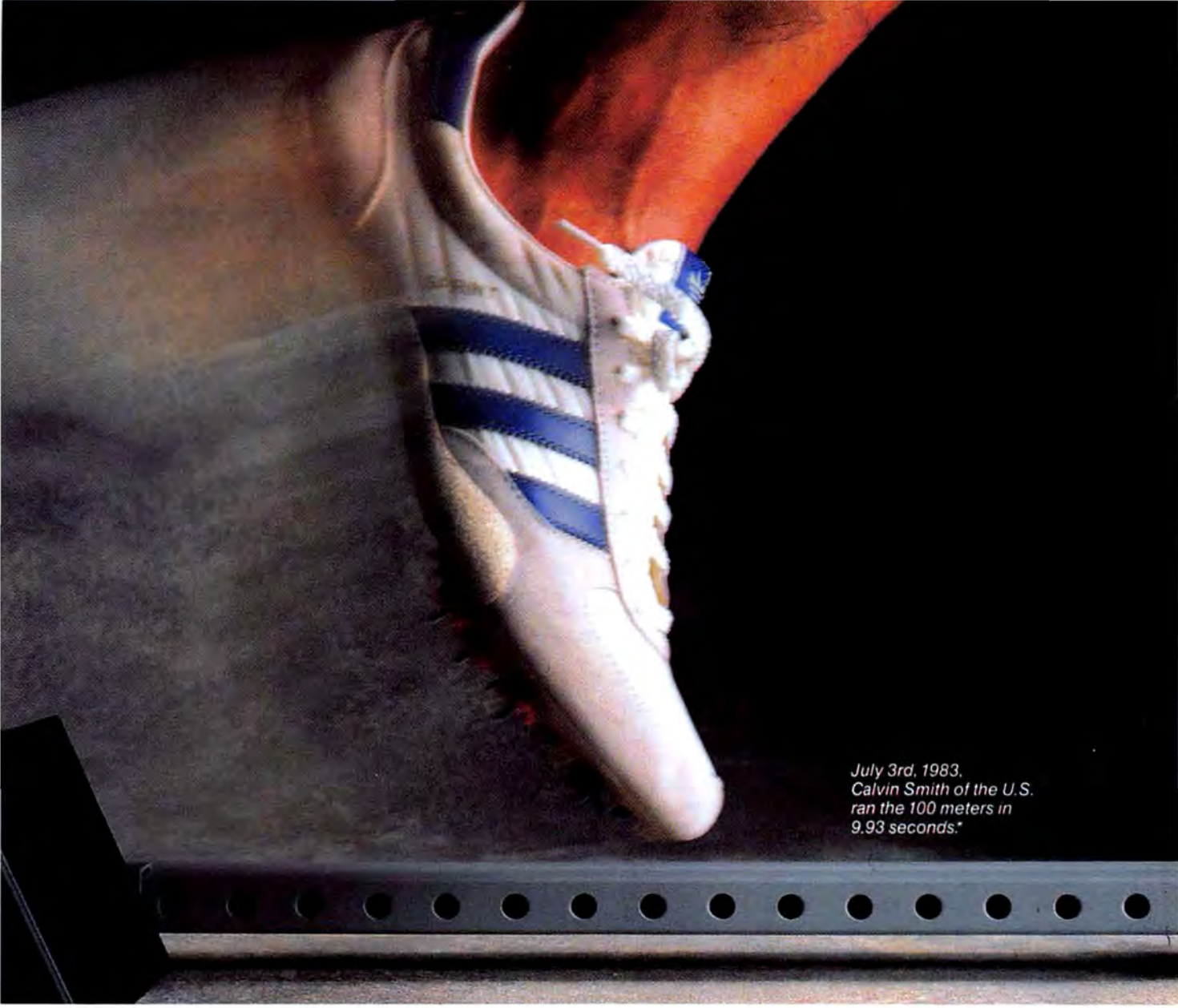
Converting object-oriented graphics, however, is not so easy. The most stable and widely supported object format is PICT. But even with a common object-oriented file format (like PICT), moving object graphics from program to program doesn't always yield predictable results.

The bad news is that many applications "embellish" their PICT files, adding nonstandard ways of describing objects that other applications don't know how to interpret. Cricket Draw is a prime example.

The good news, at least on the PC side, is that Ventura can place, display, and print PICT images — usually. As with paint images, Ventura converts the PICT images to the file format it feels most comfortable with — GEM's (guess what) .GEM format, leaving the original PICT file intact. In my experience, however, the only PICT files that Ventura converts with any reliability are those created by MacDraw. PICT files from Canvas and The Curator are completely unpalatable to Ventura, and I don't even bother trying with Cricket Draw. And even with MacDraw-created PICT files, the images sometimes come out strangely, both on-screen and when printed. When they're garbled, though, at least the on-screen and printed images are garbled in the same way, so we can give Ventura a gold star for consistency.

KANDU CAN DO

I know of only one program that can convert editable object-oriented graphics from Mac to IBM formats (or vice versa). There are other programs that convert among different Mac formats or among different IBM formats, but if you want to go from one world to the other, you'll need CAD-



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MOVER, from Kandu. As the name and $495 price imply, the program comes from the CAD world, not from desktop publishing. So you won't find formats like .GEM and Windows Metafile — the object-oriented standards for GEM and Windows, respectively — on the menu.

You will, however, find IGES (Initial Graphics Exchange Standard — an extremely robust mainframe format), DXF (AutoCAD's Drawing Interchange Format), MacDraw, MiniCAD 2D and 3D, SpaceEdit, and Snap on the input side. For output, you can get IGES, DXF, PICT, MacDraw, MiniCAD, and MSC/pal (a structural analysis program). More formats are forthcoming.

CADMOVER converts most of the information in most of its supported file formats, though some things don't come across. If you are converting a MacDraw file that includes formatted typography to DXF format for use in AutoCAD, the type will come across as text and will display in AutoCAD in everyone's favorite stick font. Embedded bit-mapped objects are out the window no matter what (which is where many people believe they should remain), as are fill patterns when going to a plotter-directed format like DXF.

CADMOVER does convert the bulk of the file, though, and in some cases (especially when converting between Mac applications), all of it. It will even preserve multilayer drawings when converting between programs that support them. You can specify an output size for PICT files, so you don't end up with converted maps from AutoCAD that are the size of Cleveland.

POSTSCRIPT PRESCRIPTIONS

Even CADMOVER can't do everything. If you want Illustrator-produced graphics on your Ventura pages, or if you want to edit AutoCAD images with Illustrator, you need to move into the realm of PostScript.

PostScript files can include most of the object attributes imaginable — fills, colors, curves, bit maps — just about anything you might want in a graphic can be described with Post-

The Curator Cure

Most programs on the Macintosh let you Save As in different file formats, so you can move images between different programs. It seems as if the file format you want, though, is always the one that's not on the menu.

Enter The Curator, from Solutions, the people who brought you SmartScrap, The Clipper, and SuperGlue. You can use The Curator (either as an application or a DA) to open files in one format and save them in another. It handles EPS files (Mac and IBM), TIFF, PICT, Paint, Solutions' Glue format, and straight PostScript.

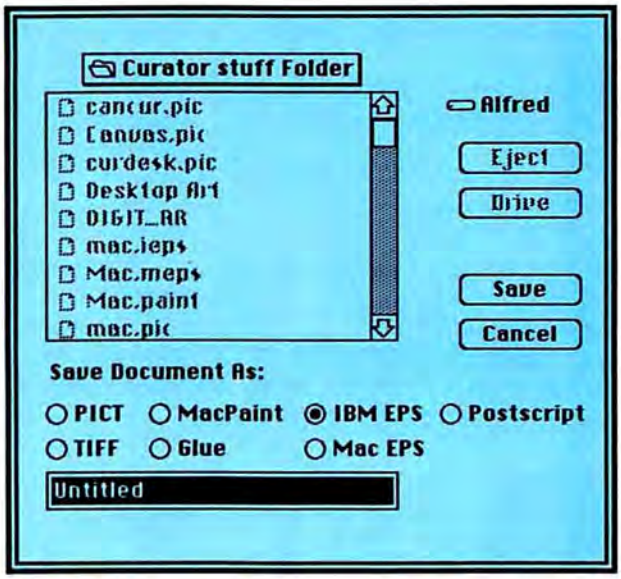
The Curator also lets you catalog and search for images on your disk, but for the purpose of Mac-IBM file transfer, its usefulness is more limited. If you have a Macintosh EPS image that you want to use in PC PageMaker (with a screen representation), it lets you save that image in IBM EPS format.

Ventura doesn't show the screen representation of an EPS file — only a gray box appears on the screen — so no conversion is necessary or useful. You can convert an EPS image as a low-res (paint format) bit map in Ventura, which is useful if you plan on pasting in the high-res version, printed separately, on the final pages. I had no luck placing Curator-created PICT files in Ventura. The only PICT files that seem to work in Ventura are those created by MacDraw. And even those don't always work.

The Curator can always convert from more robust formats (like EPS) down to less robust formats (TIFF, Paint, PICT), but the other direction is tougher. It cannot convert a PICT image to Illustrator PostScript, which would be useful if you wanted to edit a PICT image with Illustrator or FreeHand.

While The Curator is a useful tool for keeping track of art and converting between Macintosh programs, it doesn't solve many problems when you want to move files between the Mac and the IBM. If Ventura 2.0 and other IBM programs start taking advantage of EPS files with bit-mapped renditions, The Curator's ability to convert from Mac EPS to IBM EPS may prove useful. It would let you move Illustrator and FreeHand images to the IBM for WYSIWYG page layout. Freehand doesn't save in IBM EPS format, so you could use The Curator to create your IBM version and move it over. Although IIIlustrator already saves in IBM EPS format, you would need The Curator if you have Illustrator clip art but don't have Illustrator. For the moment, though, The Curator is primarily a tool for Macintosh users.

Is it worth investing in The Curator? After all, you might argue, applications are coming with more and more Save As file format options. And, anyway, some of these formats will disappear as the leading contenders become entrenched standards. But don't hold your breath. Just as MultiFinder hasn't killed off DAs, the slow pace of standardization won't soon render The Curator obsolete.



The Curator can convert files between several Macintosh formats, and it also works well for converting IBM .TIF files to more widely usable Mac TIFF files.

How to Get There From Here

Welcome to the game of conversion, in which we transform graphics from one format to another. If you've developed an image in one application or on one computer, you can usually use it in other applications or on another computer, but it's not always easy.

One especially tricky journey is the road from IBM CAD images to editable Illustrator-format EPS files. As we progress from step to step, the data format changes but, if all goes well, the image itself stays the same. Be careful not to stray!



1. First we start out with our CAD file created on the IBM. (Pretty easy so far . . . .)



3. With luck, CADMOVER will save the DXF file in PICT, MacDraw, or MiniCAD format on the Mac.



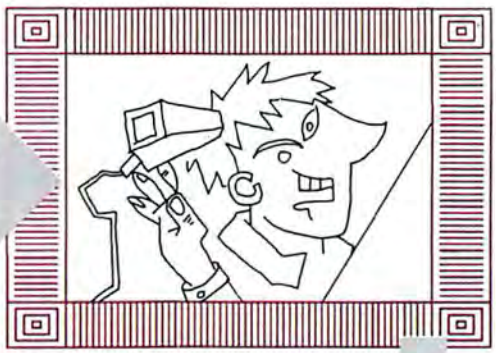
Ooh! Too bad! Some of you are already off the track. You might need a separate program to convert the drawing to DXF.



2. Some CAD programs let you save documents in AutoCAD's DXF (Document Interchange Format).

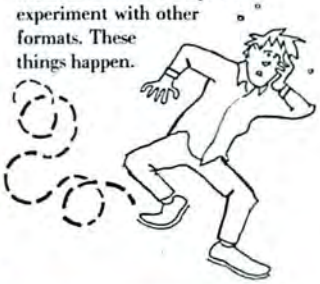


4. Open the document with MacDraw, and print the image to disk as Laper Prep PostScript.



5. Xris-Xros can convert Laser Prep PostScript to Illustrator-format PostScript . . . er . . . some of you don't look too good.

Warning: Your CAD program might not have saved the image in a Mac-usable format to begin with. Go back two steps and experiment with other formats. These things happen.





8. Relax — you made it!



7. Open the file with Illustrator or FreeHand for further editing. Save the image as EPS.



6. Ah, yes, we're all here now.

Script. Most page-makeup programs on the Mac, and Ventura and PageMaker on the IBM, can place a special variety of PostScript file called Encapsulated PostScript (EPS).

EPS files have two components. The first and most obvious is the PostScript code itself. There are lots of sources for PostScript code, aside from applications that generate it automatically. Books on PostScript and bulletin boards with graphics forums are among the most easily accessible. Normally you would download this code directly to your PostScript printer, using a download application. The same downloader you use for fonts should work; others are also available in the public domain.

Once you've converted these files to EPS format, you can place them in page-layout programs as well. Luckily, you can turn any PostScript file into an EPS file by simply adding the following lines at the beginning of the file with your text editor or word processor. (With word processors, remember to save as Text Only.) Bear in mind, though, that some PostScript commands are prohibited in EPS files. Once you've added these lines, you can place the text file as a graphic; it will appear as a gray box on the page.

```
%!PS-Adobe-2.0 EPSF-1.2
%%Creator: What program created it?
%%For: Your name here
%%Title: The filename of thisfile
%%CreationDate: Helps in tracking revisions
%%BoundingBox:100 100 200 200
%%EndComments
```

Substitute the appropriate information in the Creator, For, Title, and CreationDate lines. The BoundingBox line is the critical one — it determines the size and position of the graphic on the page. (The rest are obligatory PostScript requirements or are nice because some page-makeup programs will display them when you place the image.) It may take some trial and error to get the bounding box numbers right; they're the llx, lly, urx, and ury (lower- and upper-left and lower- and upper-right x and y) values in points, measured (usually) from the lower-left corner of the page. (The values used here are just examples.) The easiest way to get these numbers is to download the file to a printer and measure the output with a ruler.

BEYOND THE BOX

Creating EPS files is fairly easy. But when you place these homegrown EPS files on-screen, all you'll see on screen is a gray box (although they'll print fine, if you've done everything right). To see an on-screen representation of your PostScript code, your EPS file needs to have its second component, a bit map.

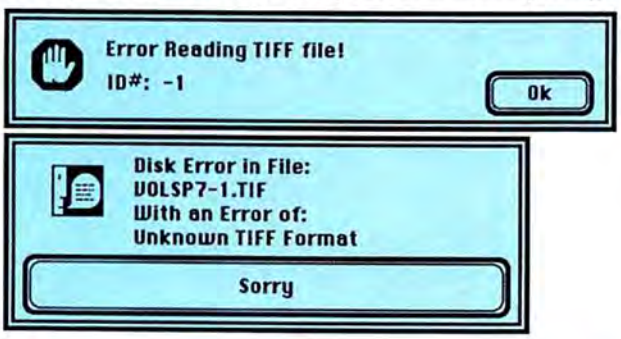
In Macintosh EPS, the bit-mapped portion is in PICT format. On the IBM, it's in .TIF format. At least two Mac programs can create IBM EPS files — Illustrator and The Curator. Unfortunately, the current version of Ventura blithely ignores the bit-mapped rendition and displays a gray box. Harrumph. PC PageMaker shows the bit-mapped image, but let's face it: If you're using PageMaker, you should be using a Mac.

When Ventura 2.0 comes out, the IBM EPS format may be significant. As it stands, all you get now is a gray box on the page, whether your EPS file has a bit-mapped rendition or not.

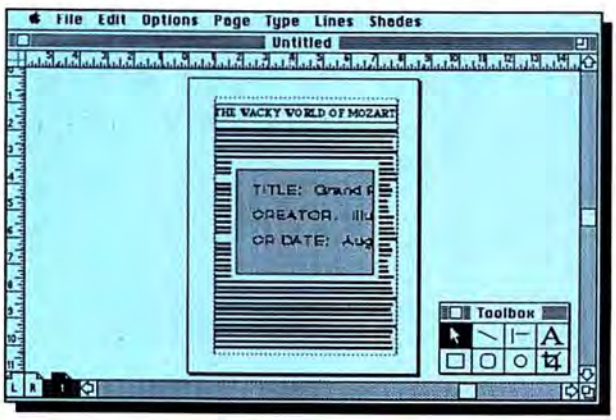
Placing pictures on a page is all very well and good, but what if you want to edit a CAD drawing in Illustrator or FreeHand? CADMOVER can convert CAD files to PICT format, so you can edit them in MacDraw or something similar, but to edit in Illustrator or FreeHand you'll need to convert to Illustrator PostScript.

Now, there is PostScript and there is PostScript, and Illustrator has its own rules. Though it has some limitations (it has no facility for editable fountains — smooth transitions from one color or gray level to another — and control over type spacing is limited), Illustrator PostScript is becoming a standard for editable PostScript code. FreeHand reads Illustrator files directly and automatically converts them to FreeHand format. Other programs are also emerging that can read and write Illustrator-formatted PostScript.

But how can we get an AutoCAD image (that we've managed to convert to PICT) into Illustrator format? The answer is Xris-Xros (pronounced criss-cross), from Taylored Graphics.



Programs can't always read each others' TIFF files. This kind of error message is fairly common.



You can encapsulate PostScript graphics simply by adding a few lines of code to the file and saving it as text. You'll be able to place this EPS file as a graphic in a page-layout program like PageMaker, although all you'll get on the screen is a gray box to remind you of what's missing.

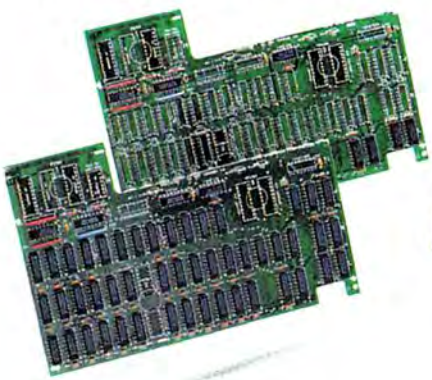
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PREP SCHOOL

To explain how Xris-Xros works, I have to backtrack for a moment and explain another PostScript format. It's actually the most common PostScript format, because it is generated every time you print from most Macintosh applications. I call it Laser Prep-dependent PostScript, or Laser Prep PostScript for short.

Laser Prep is a set of PostScript procedures developed by Apple to bridge the gap between QuickDraw, which Macs use to display images on the screen, and PostScript, the language of the LaserWriter. Rather than writing all their own PostScript routines from scratch, Macintosh developers whose applications output to PostScript printers typically have their programs generate simple PostScript routines that call these exisiting Laser Prep routines. For this to work, Laser Prep must be loaded in the printer first. This is what is going on when you see the "Initializing Printer" message when you print a file.

You can intercept this Laser Prep PostScript and save it to an editable disk file by entering Command-F just after you click on OK in the Print dialog box. Doing so saves a text file containing PostScript code that describes your document.

You can download it directly to the printer using a download application — but if Laser Prep has not been downloaded first, nothing comes out but an error message.

The payoff is that Xris-Xros can turn this Laser Prep PostScript into Illustrator PostScript. Quite a trick. You can open this file in Illustrator (or FreeHand), edit it like any other Illustrator drawing, then save it as EPS, with its bit-mapped representation.

With AutoCAD drawings and the like, you'll have to convert the AutoCAD DXF file to PICT, MacDraw, or MiniCAD format with CADMOVER. Open the file with your Mac drawing program, print it to disk as Laser Prep PostScript, then convert it to Illustrator format with Xris-Xros.

Besides converting AutoCAD files, Xris-Xros has a multitude of other uses. Just about every Macintosh program prints Laser Prep PostScript to disk, so you can use Xris-Xros on any graphic file (sorry, no bit maps; Illustrator doesn't know from bit maps), word processor file (one page at a time, though), spreadsheet, database — just about anything. Xris-Xros even handles rounded-corner rectangles, most rotated text (laser fonts only), most gray scales (patterns are iffy), and it adds center points to circles and squares.

There are some things that Xris-Xros doesn't handle, starting with Cricket Draw-created Laser Prep PostScript (Cricket Draw PostScript is known for its quirkiness). Smoothed polygons come over sans smoothing. And it completely ignores both arcs drawn with arc tools and objects for which Illustrator does not have an equivalent. It will not convert fill and pen patterns to bit maps, for instance. For those objects, you'll simply have to redraw them in Illustrator or FreeHand, or respecify the fill and line patterns, perhaps using your original as a template.

Sometimes there are more elegant solutions to compatibility problems besides the brute-force conversion approach. For example, some applications will let you use one type of screen image as a template for a new, polished graphic. Since you need just a screen representation, all you need is a a bit-mapped image (which you can create using a screen dump capture, for example, and convert using the techniques described earlier) to trace over in a drawing program.

Both Digital Darkroom and Illustrator 88 have Auto-Tracing features that automate the tracing process. (Both programs should be shipping by the time you read this.) Auto-Tracing won't always recreate the original image perfectly, but it can provide more options than a straight file format conversion. For example, you can control the tightness of the tracing, choosing to smooth out some of the rough edges automatically, if you like.

It's easy to get carried away with conversion mania — don't overlook the conversion path of least resistance. If all you really need is a rough "FPO" (for position only) representation of your graphic for layout purposes, you can always just grab a screen dump of the image, convert it to a format your page-makeup program can read, print out the high-resolution version, and paste it down with glue. It may not be WYSIWYG, and it may not be elegant, but sometimes the most obvious solutions are also the fastest and easiest ones.

STEVE ROTH IS THE EDITOR OF PERSONAL PUBLISHING MAGAZINE AND REAL WORLD POSTSCRIPT (DUE IN OCTOBER FROM ADDISON-WESLEY). HE LIVES IN SEATTLE.

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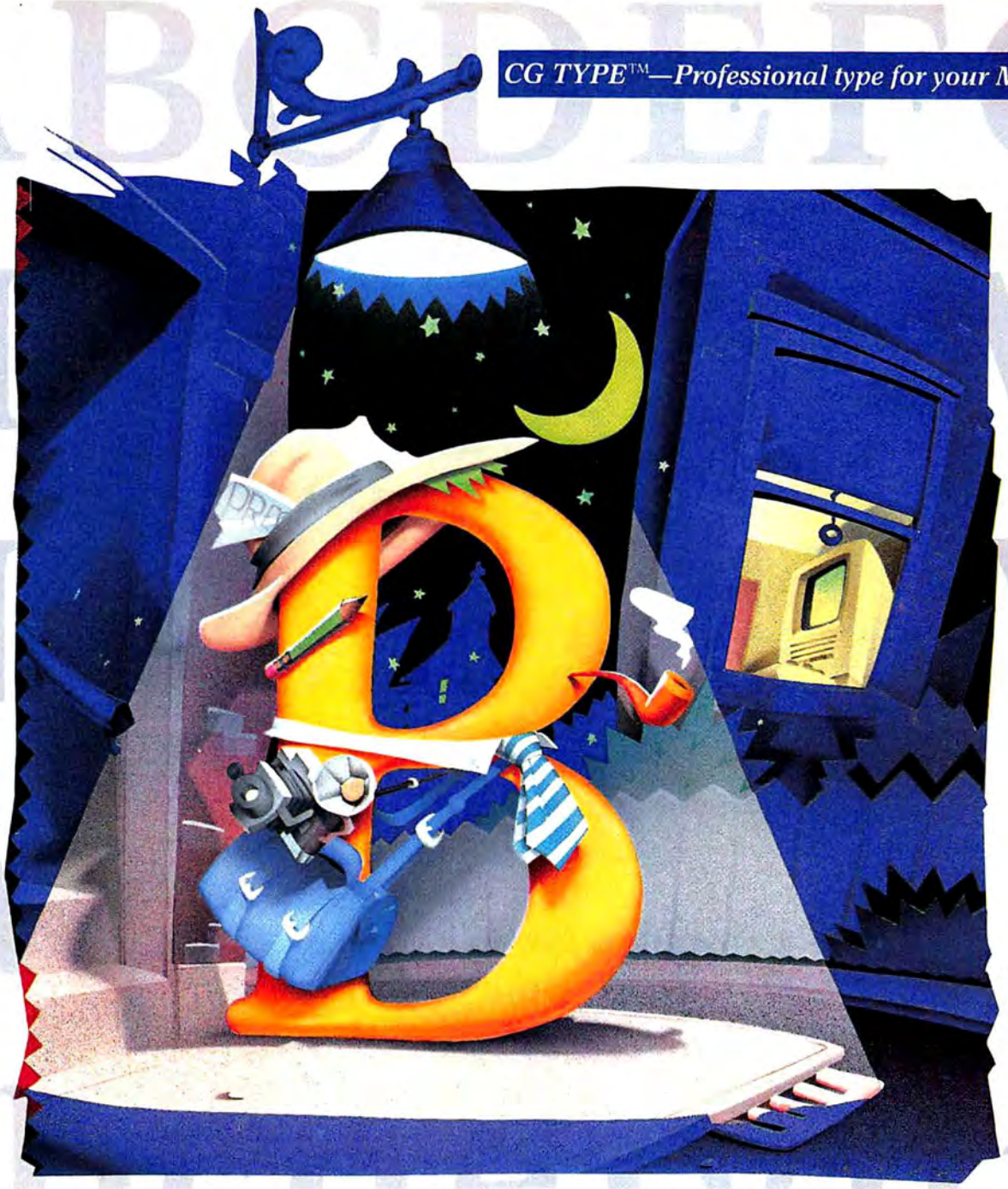
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A Small Case of the Blues

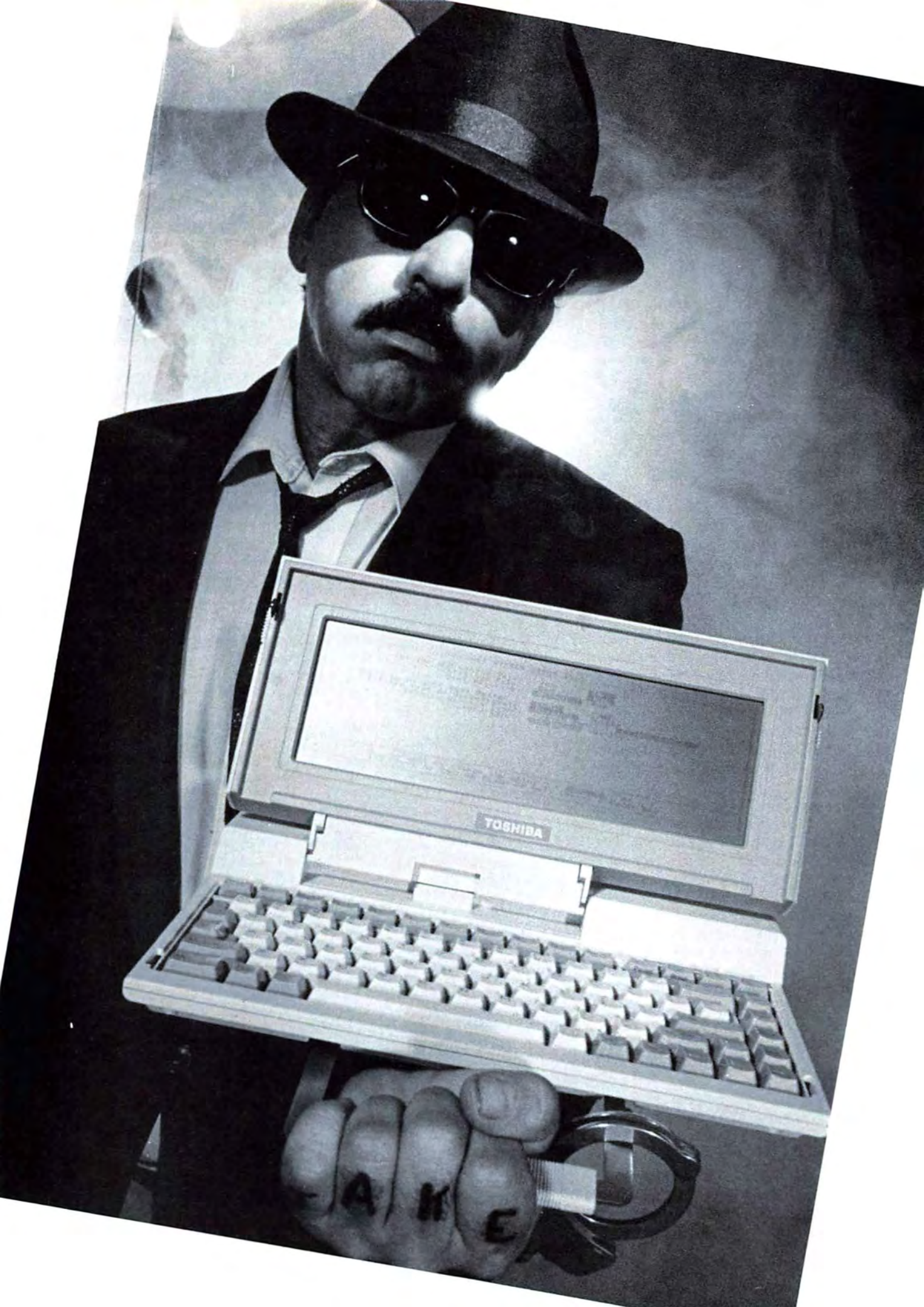
If you want a low-cost, lightweight laptop, DOS is the way to go right now.

A Macintosh in a traveling bag, with keyboard, mouse, and connecting cords, weighs nearly 25 pounds. That's about as much as six, full 2-liter beverage bottles. Sound like anything you'd like to carry around?

Even if you don't mind that the shape that looks so good on your desk is a bit awkward when tucked under your arm, there's another major problem: 110 volts. Finding the necessary 110-volt outlet is difficult, if not impossible, in the average car, train, or plane. So in spite of the molded-in handle, a Mac is about as portable as a 19-inch "portable" TV.

Sure you can take your Mac with you. It is "transportable." But as you sit there, with your Mac stowed under the seat in front of you, you might cast covetous eyes at MS-DOS users with

BY STEVEN BOBKER


TOSHIBA
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their sleek and effective portables. Most of the MS-DOS laptops and portables you'll be seeing are pricey, ranging from $2,000 to top-of-the-line units that list for just under $8,000.

Still, if you must compute on the road, there are several options. You could buy a Radio Shack Model 100 or 102. These very limited machines weigh between 3 and 4 pounds, can have (without spending a lot on kludgy extras) 32K of random access memory (enough for 12 to 15 pages of text), and are graced with a truly awful LCD screen that is 25-characters wide by 8-lines deep. Still, at under $500 (often much much less when it's on sale), the Radio Shack has became a companion to many travelers. The slightly bigger and twice as heavy Model 200 also has found some favor. Both machines use a nonstandard operating system, and you can transfer only ASCII (text) files between them and your Mac.



Some people have opted for the expensive and heavy portable Macs built by Dynamac and Colby. The machines are nice and have a good shape for carrying, but they don't weigh much less than a standard Mac, and they don't run on batteries. You still have to plug them in. Production appears to have been steady, but the actual quantities produced are low.



Or you could be one of the multitude waiting (and waiting) for Apple's laptop Mac. Apple will produce one. The questions are: How much will it weigh, will it have battery power, and how much is it going to cost? The rest of the details really don't matter. *Macintosh Today* obtained some secret Apple documents in early 1988 and published the details of the prototype code-named Laguna. They described a machine that would be too heavy and too expensive.

Whether or not Laguna reaches market, the decisions that went into its design are not likely to differ from those that shape the final version of Apple's laptop. And that version is not far off. It should be available by early next year at the latest.

Thus you're left with some tough choices. Do you struggle along with your underpowered but easily portable Radio Shack, do you invest in a powerful but heavy and expensive Dynamac, Colby, or MS-DOS portable, do you lug your "transportable" Mac around, or do you just wait?

THE CHARGE OF THE LIGHT COMPUTER

The best solution for many of today's users is the relatively new "bargain-basement" MS-DOS portables. These are exemplified by Tandy's 1400 LT, Datavue's Spark, and Toshiba's T1000. Of the three, the T1000 is superior, especially for Mac people making their first (and probably only) foray into MS-DOS.

The T1000 has many virtues. First and most obvious is its small size and low weight. It weighs a mere 6 ½ pounds. That's about 3 pounds lighter than a stripped Spark and at least 5 pounds lighter than any other MS-DOS machine (not including the overpriced GridLite Pluses, which come in at about 10 pounds ready-to-run). The 1400 LT is heavy, weighing every bit of 14 pounds.

So what's a few pounds? Well, 5 pounds is equal to 2 tons. Really. Try this experiment. Find yourself a 6 ½-pound weight and a 12-pound weight. Put a handle on each (or a shoulder strap if you prefer). Go to your favorite airport and tell yourself your plane is leaving in just a few minutes from the gate that's farthest away. Get to that gate as fast as possible. See, 5 pounds is equal to at least 2 tons, maybe more.

If the first thing that you notice about the Tosh is its light weight, the second thing you'll notice is its small size. In fact, you might wonder wheth-

Living with MS-DOS

What's MS-DOS really like? Is it hard to learn? Or is it as easy and as efficient as its defenders have claimed? You'll come face to face with these questions if you buy an MS-DOS laptop.

If you're an experienced MS-DOS user, life will be as it used to be. You'll have the same problems you always had with MS-DOS. If you've never used MS-DOS, you have a bit of learning to do.

The first thing you're likely to notice is that virtually nothing is intuitive. You have to read the user's manual and you should keep the DOS manual near the computer for a while. And take the time right at the start to learn some MS-DOS jargon; it's quite different from Mac jargon. Be sure you know what "log" means and what directories and pathnames are.

Don't be too concerned with the niceties of MS-DOS. You want to be in the DOS layer as little as possible, generally just to find and launch programs and copy files. You will also need to be in DOS to format blank disks. Don't worry about Autoexec.bat and Config.sys files. What Toshiba provides will get you through all basic operations. If needed, both of those files can be and sometimes are modified by other programs you run (such as Battery Watch) so you really don't have to deal with them at all.

You can learn enough to do everything you need to in under an hour. That's the good part of MS-DOS. The bad part is that the system forgives nothing. You need to type commands and filenames and type them exactly right. Any error will result in nothing happening. If something doesn't work, or doesn't work the way you expected it to, carefully proofread the command line you just typed. MS-DOS rewards good typists and adds a great deal of misery to the lives of bad typists. My particular foible is that I often type a semicolon rather than a colon when logging (switching) to another drive (you have to tell MS-DOS which drive it should be using — it's not smart enough to search all on-line drives automatically). When I do that, nothing happens (well, actually I get the infamous "*letter* >" again). You fix errors of that sort by retyping the whole command line.

MS-DOS is very fast, if you don't take into account the time it takes to type in commands and the time it takes to find and fix your typographical errors. The reality of MS-DOS is that it is fairly simple, at least at the level you need to use it, and a real, royal pain. Those who compared it favorably with the early Mac operating system were obvious MS-DOS partisans who could not have tried the Mac for more than a few minutes. And if you remember disk swapping on 128K Macs with favor, you have a treat coming when you use the MS-DOS copy command.

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er something that small could have a screen big enough to be legible and insides powerful enough to handle your needs.

SCROLL IT!

It does (that's the answer to both questions). The screen, which uses supertwist LCD technology, is adequate, though barely. It's the computer's weakest point. Still, it can display 25 lines of 80 characters each. The height of the letters is reduced; each is 0.59 units high compared to the same letter on an IBM or Compaq full-size screen. And since the display is made up of LCDs, you need to look at it directly. If it's not right in front of you, you won't be able to read it. That makes this a one-person screen; two people can't use it without a lot of either head or computer moving.





On the plus side, the screen is relatively bright. Since LCD screens require good lighting, many laptops now use backlit LCD screens. However, backlighting makes for a noisier (they tend to whine softly but audibly), heavier screen that uses lots more power, which in turn requires bigger and heavier batteries.

The T1000 screen is perfectly readable on planes, both in daylight and at night, and it remains legible even in ambient sunlight or with the overhead reading light on. Though glare is always present, you can usually find an angle that minimizes it.

The T1000's screen has proven a good and sturdy performer wherever it's been tried. You can adjust the screen's angle to exactly what you want — from closed to just short of flat back (about a 170- or 175-degree range). The hinge is strong and the screen never shifts on its own. Toshiba has also provided a contrast control (on the lower-left side) to make the screen even easier to use.

While it's not the Mac screen you're used to, it isn't a dog either. Long sessions are easy on the eyes. The major problem is slowness in actually drawing the screen. If, for example, you're connected to a bulletin board and receiving data at 1200 baud, the screen's efforts to keep up produce an unpleasant effect that is hard to read. (The solution is to capture the material to a disk or memory file and read it afterward.) And while I don't think you could play arcade-style games on this screen, Ancient Art of War at Sea, an animated strategy game, proved perfectly playable.

One special feature of the screen is its ability to display both regular and boldface type. The boldface is far more readable than the rather thin regular type, so I use bold most of the time. The regular face makes a nice, italic-like contrast. To toggle between the two typefaces, just press the Fn key and the right arrow key.

HAND ME THE KEYS

The T1000's keyboard has 82 keys, including ten function keys placed across the top. They feel less crisp than the Mac ADB keyboards (which are what I'm most used to) but altogether very pleasant. An embedded numeric keypad is toggled on and off by another Fn-key combination. In general, the Fn key works like the Mac's Command key. The embedded numeric keypad is not a problem unless you do a lot of spreadsheet work. If you plan to use numbers a lot, you can get from Toshiba a separate numeric keypad that plugs into the left side of the computer.

The T1000 has eight cursor-positioning keys, a lot for a machine in this class. The four cursor keys form an inverted T, and the separate Home, End, PgUp, and PgDn keys are arrayed along the right. All are well

Connecting Macs and MS-DOS

You have four choices: (1) direct connection using terminal software on both ends, (2) Traveling Software's LapLink Mac, (3) DataViz's MacLink Plus, and (4) Vano Associates' MacChuck.

Option 1, direct connect, is the cheapest — if you already have the software and the cable. However, the fastest you're likely to be able to transfer data is at 19,200 baud, one-third the speed of the dedicated programs, and there's no file-format translation. Consider this method a last resort.

The last option, MacChuck, would be a fine choice except that it requires DOS 3.2 on the Toshiba end. The interface, which is primarily operated from the Mac screen, is good and my MacChuck came with an excellent cable with Mini-8 and nine-pin connectors on the Mac end and serial 25-pin and AT-style nine-pin connectors on the PC end.

That leaves LapLink Mac and MacLink Plus. Both programs are excellent, transfer files at 57,600 baud, and have similar functionality but very different approaches. LapLink Mac puts virtually all its operations on the PC screen, and while it is easy to use, you'll need to learn and understand a few DOS commands. It also comes with the same excellent cable included in MacChuck. While this program doesn't have the extensive file-translation programs of MacLink Plus, it does have extensive file grouping and tagging capabilities, a feature that laptop users usually find more useful than format translation.

MacLink Plus was designed on a Mac and puts virtually all its operations on the Mac screen. It can take files in many different formats and translate them to many other formats. However, since you're likely to use a limited selection of software on your laptop, this feature isn't as valuable as it sounds. Various copies of MacLink Plus have come with different cables. The most recent had a straight cable and several adapters. This isn't as elegant as the LapLink Mac/MacChuck solution, but it's equally workable.

LapLink Mac is very MultiFinder friendly, and completes large, grouped transfers in the background, while running in a small 70K partition. MacLink Plus, on the other hand, doesn't crash or freeze MultiFinder, but it doesn't let you do anything else while it's working. We can't call it MultiFinder hostile, but it sure isn't friendly, either.

You're going to need some way to connect your Mac and your laptop. If you already know and have one of these programs, stick with it. If you need to buy one, get LapLink Mac.

To contact these companies, see the directory following "Connect the DOS" in this issue.



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placed and a pleasure to use. You can use the Fn key to produce codes like those created by IBM's AT and PS/2 keyboards' right (or duplicate) Control and Alternate keys. The plus and minus keys on the numeric keypad also work as required by Ashton-Tate's Framework II, allowing you to use that fine integrated program.

DISKS AND DETAILS

The T1000 has only one external disk drive, a 720K 3.5-inch model. That's not nearly as restrictive as it sounds since all of MS-DOS is in ROM. You can start this computer without a disk inserted! The DOS provided is the rather old MS-DOS 2.11, but it has proven adequate for everything I've wanted to do. If your software requires DOS 3.0 or higher, you can get MS-DOS 3.2 from Toshiba (or a mail-order house). When you start up, disk drive C: is the default start-up drive. If you have added the optional memory as a RAM disk, that becomes drive D:. The floppy drive can be addressed as either drive A: (so you can see the infamous A> prompt) or drive B:. There's no way to attach a hard disk.

The rest of the basics are just that: basic. The CPU is a 4.77-MHz 80C88. The C is for CMOS, which translates to very low power consumption. As shipped, the T1000 has 512K of RAM. There are connectors for both composite and RGB monitors, a 9-pin AT-style serial port, a parallel printer port, and an external floppy drive port.

> Laptop computers like the Tosh are mostly used for writing and telecommunicating. They're both too slow and too limited to handle big spreadsheet jobs and other heavy number-crunching applications.

The first thing to add to the T1000 is the 768K memory card. This option is not optional. You must have it to get the full use of the T1000. You'll need to open the case to install this tiny card, but that's a simple matter and the board comes with clear, correct, and well-illustrated instructions.

You can use this additional memory in several ways, but the two most likely options are to configure the T1000 with 640K of working RAM (the MS-DOS maximum) and a 640K hard RAM disk (hard meaning it retains its contents after shutdown — as long as the battery has any power at all) or as 512K working space and 768K hard RAM. Don't worry too much about losing the hard RAM. I left the T1000 on for 36 hours — 31 hours past rated operating time and 33 hours past the low battery warning lighting up — and the hard RAM was still intact.

The other major addition to your Tosh kit is likely to be a modem. They come in many flavors and varieties. [See the sidebar "Bits and Pieces."] You should decide based on price and speed. The internal/external choice has fairly straightforward decision criteria. The internals are lighter, more convenient, and more expensive. The externals are cheaper, heavier, and you have more parts to account for (don't forget the cable). I've gone from carrying an external to a 2400-baud Holmes Correspondent T-1024. I like it, even if it did set me back $349.

POWER USAGES

Speaking of batteries: The rated operating time is 5 hours per full charge. These are nickel-cadmium, and they require a few deep discharge cycles before they'll hold a full charge. Mine still seem to die after 3 ½ hours or so. The exact life expectancy depends on

Features Chart for Laptops

Weights are all in pounds, sizes in inches, speeds in megahertz. None have hard disks. Prices are suggested list for the configurations shown. All have "necessary" options like additional memory, internal modems, and external drives. SLCD stands for Supertwist LCD, the most basic type of portable screen.

Model	Manufacturer	Weight	Size	Speed	Screen Type/Aspect ratio	Floppy Drives?	Base Price
T1000	Toshiba	6.4	12.2×11×2.05	4.77	SLCD/0.59	One/720K*	$1,199
1400 LT	Tandy	12.8	14.5×12.4×3.8	7.16	Backlit SLCD/0.56	Two/720K	$1,599
GridLite Plus	Grid	9.7	11×13×2.5	8.00	Backlit SLCD/0.88	One/1.4 meg	$1,950
Spark	Datavue	9.0**	13×13.2×2.5	9.54	SLCD/09.59	One/720K**	$ 995
MultiSpeed EL	NEC	12.0	13.6×12.4×3.1	9.54	Backlit SLCD/0.70	Two/720K	$2,495***
Dynamac EL	Dynamac	16.0	13.8×16×3.5	7.94	Electroluminescent/1.0	One/800K	$4,995

* DOS 9 (MS-DOS 2.11) is in ROM, so the T1000 functions like a two-drive machine.
** Rarely available in minimum configuration. "Normal" options include second floppy drive ($200) and backlit screen ($135). They add about a pound and a half to the weight.
*** Also available with a plain (not backlit) SLCD screen for $2,195 list. That also saves just under a pound of weight.

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Macintosh Today
January 1988

"FASTBACK for Macintosh...will outpace most tape systems at a fraction of the cost...FASTBACK is the only one."

MacTimes
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"FASTBACK took half the time of DiskFit (to back up). FASTBACK sets an entirely new standard for performance. It truly appears to be a next-generation backup program."

Portland Mac User Group
November 1987

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February 1988



At two times faster than DiskFit, and up to five times faster than other Macintosh backup programs, FastBack sets a new standard for all Macintosh backup systems. With daily incremental backups averaging about a minute, it's probably the only backup program you'll ever truly want to use.

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how often you access the disk drive. Adding the memory card eats a tiny bit of power but not enough to worry about. An internal modem will use substantially more power.

You don't know that the T1000 is running out of juice until a tiny LED switches from green to red. The LED is hard to see under normal conditions and is of no use if you're red-green color-blind. This should be improved.

Battery power means you need a battery charger. You don't have to keep it with the computer, but you do need to carry it with you. The T1000's charger is small and, compared to others for similar computers, very light. It weighs just over 1 pound. It's well designed, having two 8-foot cords attached to it, one going to a wall outlet and the other to the T1000. This design means you don't cover an entire wall outlet or multiple positions on a power strip when you plug it in.

SOFTLY RUNS THE SOFTWARE

Laptop computers like the Tosh are mostly used for writing and telecommunicating. They're both too slow and too limited to handle big spreadsheet jobs and other heavy number-crunching applications. And their screens are not in any way suited to graphics applications. Indeed, trying to do graphics work on a supertwist LCD screen is a sure way to ruin your eyes. So what do you do about software?

You don't have to worry about DOS. Unlike every one of its competitors (of any price), the T1000 comes with MS-DOS built into its ROM. The rest is up to you. You should keep a copy of your transfer program with you, and you should also install a battery-checking program like Traveling Software's new Battery Watch. There's room for SideKick, but loading SideKick Plus into the hard RAM will be a bit trickier (although not impossible). All these programs run like champs.

To cut down on the number of disks you need to carry, consider an integrated program like Microsoft Works or Framework II as your primary application. Works is smaller (so it fits better) and is much the cheaper of the two. But both are excellent traveling companions.

I set my T1000 up to have 768K of hard RAM. In that, I keep LapLink Mac, Battery Watch, parts of SideKick, and all of Microsoft Works. And there's plenty of room left over to keep work and downloaded files. At times I've used both Word 4.0 and Smartcom III, but both of those programs take up a lot of room and would be much happier on a hard disk. Word is attractive because I use it on my Macs and so file-sharing is simplified. But I have no problems with Works files either.

There's a raft of public domain and shareware software available for these MS-DOS machines. I tried a good selection of what I'd been told was the cream of the crop. The only conclusion I could reach was that if you're used to Mac software, you're not going to like the MS-DOS PD and shareware stuff at all. Unlike Works and the other commercial software, it's just too awkward and difficult to use.

Finally, I need to warn you about disks. The T1000 uses the same 3.5-inch disks that the Mac uses. However, they are neither interchangeable with, nor readable by, the other machines. The Tosh will not warn you if you ask it to reformat (and thus trash) a Mac-formatted disk. And the Mac will want to reformat any MS-DOS disk you put into it. My solution to this problem was to buy three dozen shocking-yellow 3.5-inch disks (ask for the Velveeta-colored ones) and use them exclusively for MS-DOS software. If it's disgusting yellow it must be MS-DOS. So far that's worked just fine.

Bits and Pieces

A T1000 straight out of its box is a nice and reasonably powerful portable. But it's not complete. You need the 768K extended memory card, which lists for $549. You'll probably also want a modem. There are several choices here, including Toshiba's $399 1200-baud internal modem. Also in the 1200-baud class (and much cheaper) are external modems (very tiny) from Migent (Pocket) and Touchbase (Worldport 1200), and internals (even lighter) from Holmes, Product R&D, and Megahertz. If 2400-baud is more your speed, everyone except Toshiba and Migent offer the same, but faster, modems. If you opt for the cheaper external modems, don't forget the cable or adapter.

Toshiba has other goodies, some of which you may need. MS-DOS 3.2 lists for $75 and is necessary if your software requires DOS 3.0 or greater. Other companies' versions of 3.X DOS won't give you access to all features of the T1000, so if you need 3.X, get Toshiba's version. There's also an external 5.25-inch drive, which is rather large and bulky and certainly not something you'd like to carry around, and a totally unnecessary carry case for $59. A special cable and software will link the T1000 to other MS-DOS computers ($199), if you're so inclined.

There are also "portable" printers on the market, but they'll at least double the bulk and weight you'll be carrying. The best solution for printing on the road is to carry your Mac transfer cable and software and look for a friendly Mac to print through. If worst comes to worst, you can rent Mac time at a laser-printing service bureau. That sure beats (in output quality and your stress and fatigue levels) carrying a printer around.

What's It Really Going to Cost?

The T1000 is widely available, at a bewildering array of prices. I wouldn't pay over $800 for a basic unit, and I've seen them for $669 at Executive Computer (on 31st Street in New York) and $675 at Advance Computer Systems (San Francisco and Sunnyvale). Any price in the low $700's is a good deal.

The memory card should set you back around $300, although I've seen them every now and then for $265 — and I paid $325 for mine during a brief shortage. Modem prices range from around $125 for a 1200-baud external modem to nearly $425 for some of the 2400-baud internals. The cable should be about $15.

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LUGGAGE AND LUGGING

Until I recently acquired the internal modem, my travel kit consisted of the battery charger, a Migent Pocket Modem, LapLink Mac cable, a 10-foot telephone cord with modular (RJ11) connectors on both ends, some Radio Shack in-line phone connectors and 2-into-1 connectors, and the modem cable. All this fit into a padded 10-tape soft storage box. Loaded it weighed about 3 pounds.

When traveling, I keep the T1000 in the larger compartment of The Sharper Image's British Diplomat's Case. There's a U-shaped metal former at the top and a hardboard base piece that really protects the computer. Plus there's plenty of room for disks, papers, manuals, and plane tickets. And the computer fits like the case was custom designed for it. This bag is available through The Sharper Image catalog and at their stores. It's quality soft leather and lists for $129.95.

PAPERWORK

The T1000 comes with a User's Guide and an MS-DOS manual. Both are well-written, clear guides. You shouldn't need anything further, although since MS-DOS is distinctly not the Mac operating system, you'll have to read at least the User's Guide to get going.

Toshiba offers what they call their Exceptional Care Warranty. This warranty is good for one year and what it offers is simple. If the T1000 fails, express it back to Toshiba and they'll replace it within two days. Period. You can't ask for more. This extremely attractive offer can be extended to three years by paying Toshiba $399 for the additional two years of coverage. Peripherals are also covered for a year and you can buy extended plans for them as well.

Toshiba also supports its laptops through a section of the PC Vendor forum on CompuServe (it's section 10 of PCVEN). This section, run by Toshiba staffer Keith Comer, is a gold mine of information. If you have a question about anything at all related to your Tosh, ask it here and you'll get an answer promptly (usually from Keith and several others). And read the messages left by others. It was here that I found out about the "Mel O'Vac" modification, which involves replacing your batteries with some of similar physical size but much higher capacity. That can double your time between battery charges. The community of Tosh users (many of whom are also Mac users) that I've met here are as great as the machine.

FEELINGS ALSO COUNT

This computer isn't neutral. Everyone who sees it reacts to it. People walk up and comment on its cuteness. If they stay for a demo, they comment on its power. And if they're computer users, they want one. Even folks with big, very fast, hard-disk equipped portables come away favorably impressed. The weight is what usually sways them.

No one seems to be able to avoid checking it out, and no one dislikes it. Be prepared for lots of attention and lots of gushing comments when you slip your T1000 out of its bag and onto your lap.

I love it. It's as simple as that. And that statement takes into consideration the fact that most of the software is awkward and even unpleasant to use. This machine makes my travels far more enjoyable and productive. I can't ask for more. There's no danger that the T1000 will supplant any of the Macs I use (which range from a vanilla Plus to a lovely SE with 4 megs of RAM and a 25-MHz 68020 accelerator card). But for the road and for its price, the T1000 is as great as a Mac.

THE WEIGHT IS WHAT COUNTS

No MS-DOS portable computer is anywhere near the equal of a Mac. However, if you need or want to write or communicate while on the road, MS-DOS is the only ballgame in town right now.

The computer you tote should be as light and as convenient as possible, or you'll stop toting it. The best, by more than 3 pounds and at least a few hundred dollars, is Toshiba's T1000. It can even lead you to think pleasant thoughts about MS-DOS.

STEVEN BOBKER IS MACUSER'S CHIEF SCIENTIST. HE WRITES EXTENSIVELY, TRAVELS AN AWFUL LOT, AND LOVES HIS TOSH.

For More Information

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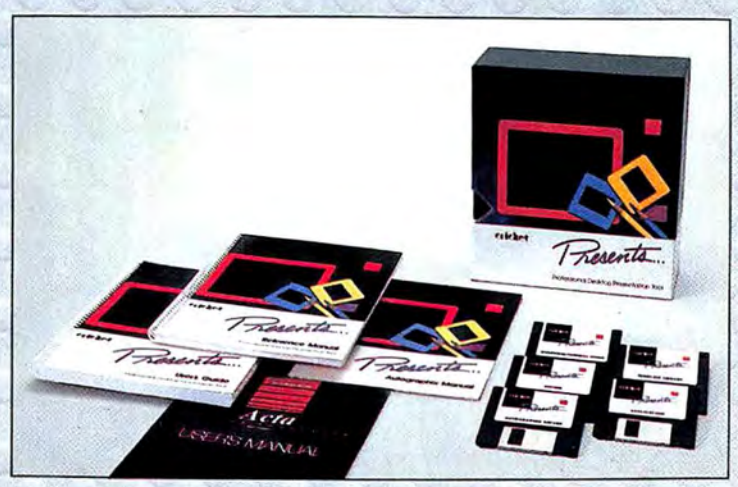
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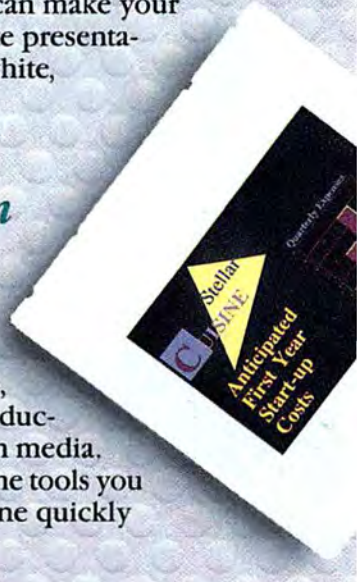
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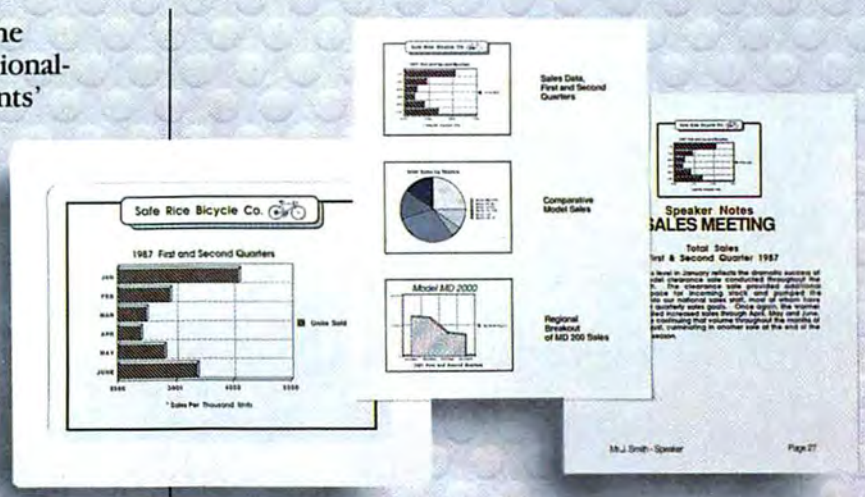
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Outfoxing dBASE

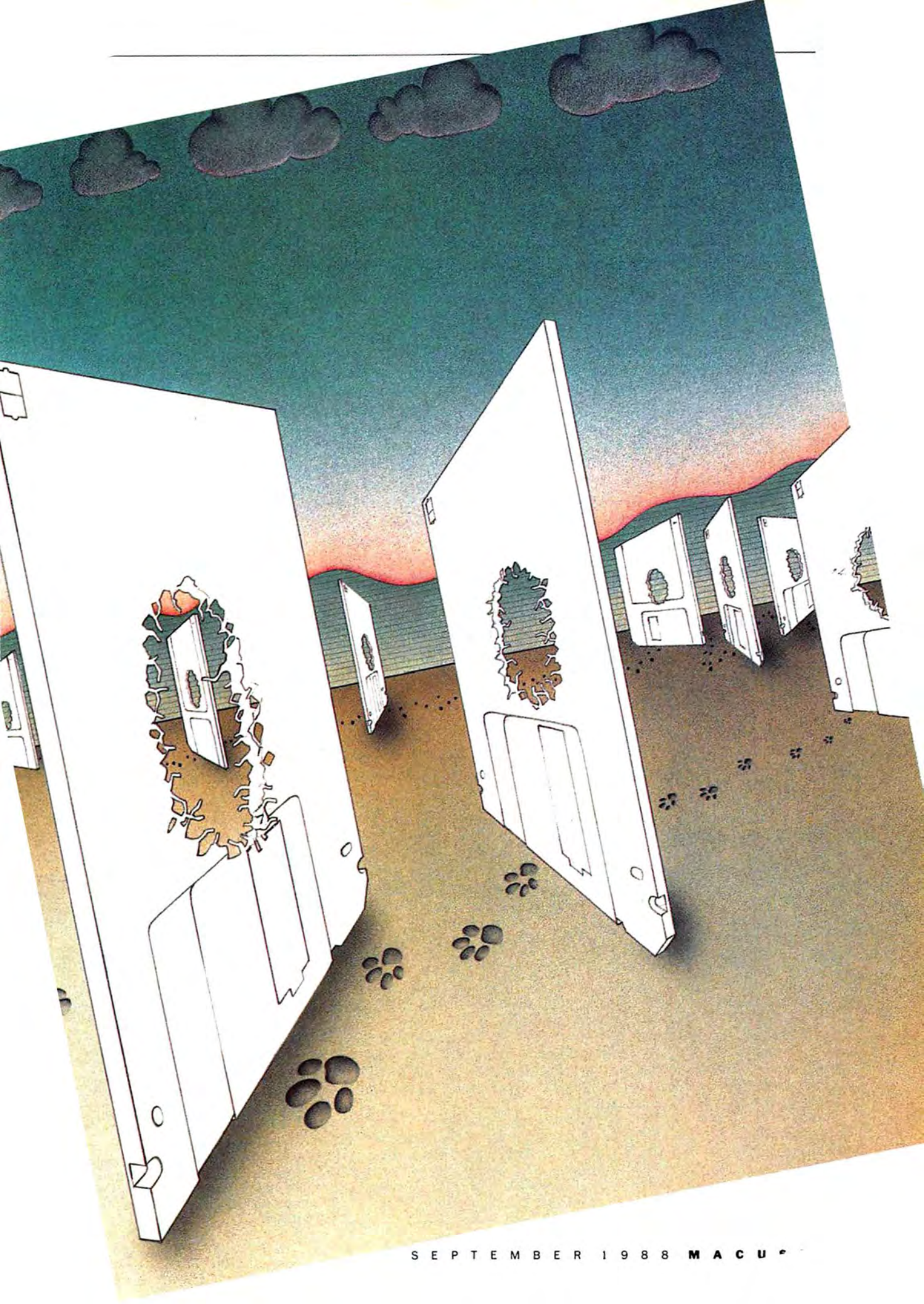
The database wars take a turn for the faster with the introduction of FoxBASE+/Mac. If it's speedy performance you crave, this is the program for you.

The databases doth protest too much, methinks. In this day of connectivity, database applications have been reluctant participants in allowing files to transfer from a PC to a Mac (and vice versa) while spreadsheets and word processors have been more compliant. If you believed dBASE/Mac would answer all your connectivity prayers, guess again. Ashton-Tate's entrant in the Mac database sweepstakes reads only data files from dBASE III PLUS, not programs or report specifications. It has been left to Fox Software, a company that's made a specialty out of doing all things dBASE better than Ashton-Tate, to truly usher dBASE into the Macintosh world.

FoxBASE+/Mac is neither the first nor is it the only program that converts PC dBASE programs to fit the Mac interface. It does have a more robust debugging environment, and it best uses the Mac interface. (See sidebar for more on FoxBASE connectivity.) FoxBASE+/Mac also has full dBASE functionality and blazing performance.

So far, the Mac has lacked the truly high-performance database capability taken for granted in MS-DOS environments. Features and ease of use have taken precedence over speed. But

BY RICHARD A. SKRINDE



companies, often with 50,000 or more records in the corporate database, cannot afford to have highly paid office workers sit idle at every access or update of the database. Before FoxBASE+/Mac, Mac databases were often pretty but pokey.

Raw speed (actually raw, blazing speed) aside, one of FoxBASE+/Mac's virtues is its ability to use unmodified dBASE III PLUS files. While doing that sacrifices the niceties of the interface, it opens the Mac to a vast number of useful, tested database applications. It's estimated that two million people use dBASE. dBASE has spawned a gigantic industry spewing forth multitudes of add-on, built-upon, and workalike products. Nearly every community college in America teaches database theory and includes a class on how to use dBASE. The underpinning of corporate America is dBASE, and the cogs of government turn on dBASE.

What is dBASE and why is it so popular? It was one of the first commercially available microcomputer database products, and it dates back to 8-bit, CP/M machines. It's a relational database that derives its application building power from its built-in, integrated, easy-to-learn programming language. However, dBASE's growth really skyrocketed with the advent of the IBM PC. Fox Software is generally considered the leading producer of dBASE-compatible products in the DOS and XENIX environments.

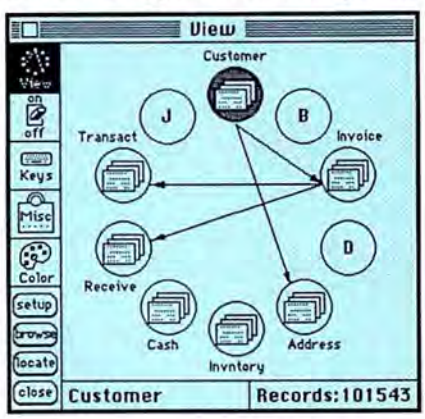
Fox supports the dBASE standards while adding power extensions to the dBASE language. It also supports transparent access to DOS, XENIX, and Macintosh environments so users can move applications without having to change source code or convert any data files. Customer support from Fox has always included frequent inexpensive updates and a priority program to ensure that customers who have uncovered a bug get an immediate response.

FoxBASE+ is best known for its performance. Every other PC dBASE vendor is always trying to catch up. FoxBASE+/Mac follows the family tradition and is a racehorse that will outrun the other Macintosh databases. Its performance encompasses more than execution speed. The ease with which program developers can create applications and the ability of FoxBASE+/Mac to maintain the integrity of data when those applications are being run in complex operating environments are two additional areas where the program excels.

GETTING SET

The testing for this review was conducted on a Macintosh II with a color monitor, 5 megabytes of RAM, and a 40-megabyte hard disk. FoxBASE+/Mac was run in a 2-megabyte partition under MultiFinder. SBT provided a copy of its accounts receivable (A/R) package in a FoxBASE+/Mac version, including sample data. The following descriptions are based on using FoxBASE+/Mac and the SBT package.

FoxBASE+/Mac is simple to install. All you need do is drag the required files to your hard disk, open the



The View window is the control panel of FoxBASE+/Mac. The SBT A/R database files are shown in the work area circles, and the relations between the files are represented by arrows.

Six Characters in Search of a Printer

Relational databases present unique challenges for users trying to share data, whether all the machines are the same type or not. With a word processor, it's not that difficult to move a file from one machine to another, even back and forth between Macs and PCs, for serial editing by several people (see "Gimme an A" and "Switch Hitters" in this issue). Relational databases, however, are typically set up with multiple data files, intricately interlinked. Passing these files around an office is definitely not recommended.

A much more likely scenario is that an entire dBASE III PLUS system, data and programs, will be converted to a FoxBASE+/Mac system. From then on it will be used on the Mac only and not shared with PC users.

Fortunately, with FoxBASE+/Mac, only one area might give you trouble in performing such a conversion: printer-control codes. A lot of dBASE code is written for printing reports on Epsons or IBM Proprinters. To take advantage of the ability of these printers to print condensed type, for example, dBASE programs use printer-control codes.

Macintosh users, on the other hand, are likely to be printing to an ImageWriter or a LaserWriter. Both of these printers, unlike Epsons and Proprinters, treat characters as graphics. The ImageWriter uses QuickDraw; the LaserWriter uses PostScript. Printer codes designed to tell character-oriented printers what to do mean absolutely nothing to ImageWriters and LaserWriters. These Mac-oriented printers instead want to know about fonts and point sizes.

The ImageWriter actually has a split personality. It has its own set of character-oriented printer-control codes and can act like a character-oriented printer. Of course, these codes are different for an ImageWriter than for other character-oriented printers. But, more importantly, FoxBASE+/Mac doesn't support addressing an ImageWriter as a character printer.

So what's a body to do? Be prepared to experiment. It's as simple as that. You'll have to rewrite any portions of your dBASE code that use printer-control codes. A good place to start is with Courier 10- and 12-point type, which correspond, respectively, to 12 and 10 pitch CPI (characters per inch) in the PC environment. If you're using condensed type on the PC, you'll simply have to adjust your Mac code to achieve the best approximation of letter- and line-spacing.



He had a reputation as a power user. But deep down he knew it wasn't true. Oh, he had the software alright. But the real power, the electrical power that ran his Mac was another story. He lived in fear of its surges and spikes. He lacked the proper outlets. He knew he was out of control...

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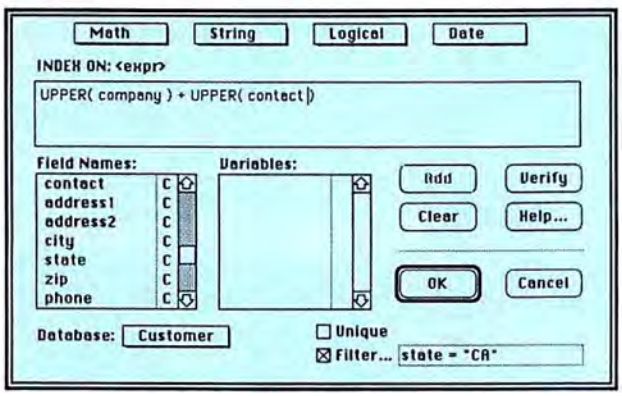
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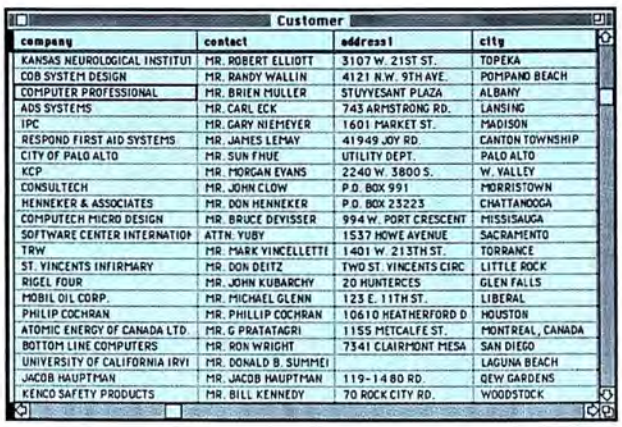
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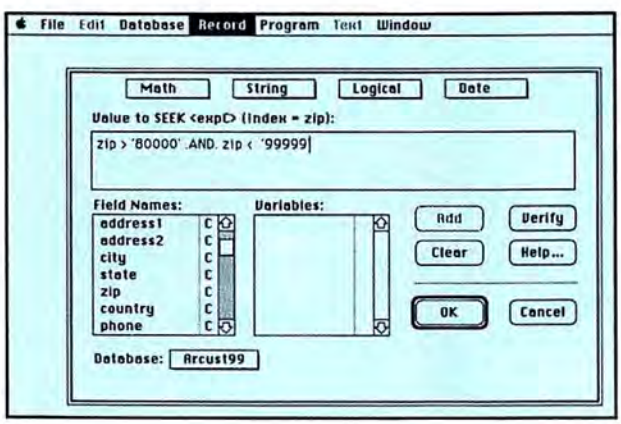
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The Expression Builder is used to help users create relations between files, create indexes for files, and set index search criteria for files. Shown here is an Expression dialog for creating an index for a file. The Filter feature is noteworthy.



The Browse window allows users to view and update database files using familiar cut, copy, and paste syntax on selected fields.



The Expression Builder has a Seek dialog to simplify the selection of index search criteria.

application, and enter the serial number and activation code. Once in the application, proceed first to the View window, which is the control panel for FoxBASE+/Mac. A work area can be selected by clicking inside any of the ten circles (A through J). Database files can be opened in a work area in three ways: double click in a work area, select Open from the File menu, or push the Setup button. You can set any environment options from the additional panel choices at the left of the View window.

Links (or relations) are established between the database files by simply dragging the mouse from one work area circle to another. This causes the Expression Builder to pop up. It lists the fields and functions that are the building blocks of relational expressions. You can construct the relations you desire between the files. An arrow shows each relation by pointing from the controlling database file to the related database file in the view window.

The Browse window enables you to view and edit the contents of a database file. For example, the contents of the A/R customer file can be selected by highlighting the customer file in a work area of the View window and then selecting the Browse window. The Browse window looks like a spreadsheet. The fields of the database are laid out as columns and each record forms a row.

The Browse tool set includes a field resizer for expanding or contracting the column widths of selected fields for display purposes, a pusher to shuffle columns and change the order in which the database fields are displayed, and a window splitter to create dual panes to support simultaneous viewing of records in two different areas of the database file. You can resize the Browse window, scroll vertically, scroll horizontally, and use all the standard editing features such as cut, copy, and paste on selected fields. Browse also allows a sequential file search (on every field) for a specified character string.

The Expression Builder is also used to create indexes and to seek records based on index criteria. For example, to add another index to the customer file, you select the customer file from the View window, pull down the File menu and pick the new index option. Then type in a name for the new index file (a separate file from the database file) in the Directory dialog box and select OK, which brings up the now familiar Expression Builder. An index expression for searching by Zip code, for example, is just as easy to create as a relation expression. The customer file will quickly be presented to you in Zip code order while the physical order of the file remains unchanged.

Finding a record using the new index is easy. Pull down the Record menu and select Seek. This pops up the Expression Builder, which allows you, in the same way you set relations and create an index, to set the search crite-

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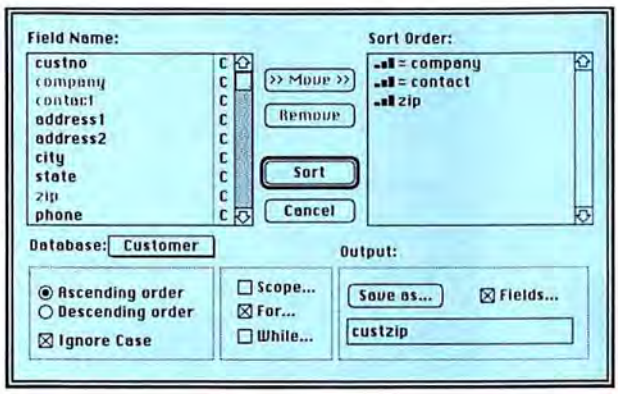
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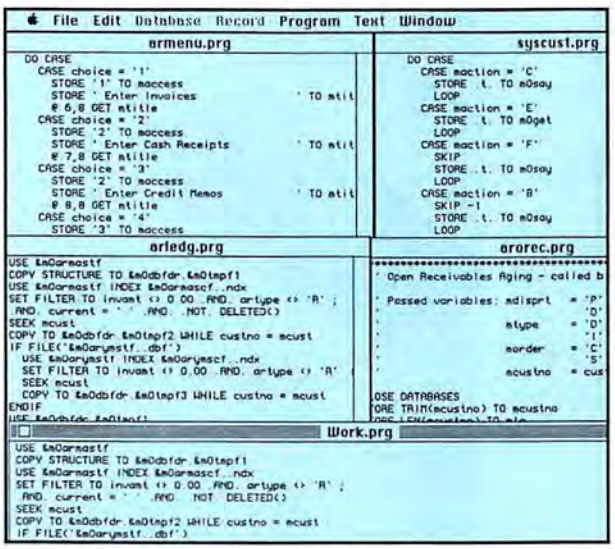
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A sorted copy of any database file can be easily created using the Sort dialog box. The original file will remain unchanged.



The Edit window is one of FoxBASE+/Mac's most powerful features. Sophisticated search and search-and-replace features combined with standard Macintosh edit facilities speed program development. SBT A/R program source files are displayed in the upper windows while the new program is being edited in the lower window.



ria for your newly created index. If you specify a Zip code for South San Francisco and click on the OK button, the record pointer will position itself at the first Zip code matching South San Francisco. FoxBASE+/Mac allows you to specify an index on a field that is filtered by an argument such as "zipcode > 80000 .and. zipcode < 90000." The result would be that only the records between 80000 and 90000 would be shown in the Browse window. Those familiar with dBASE will recognize this as another Fox extension to the language.

The customer file can be sorted by any field into a new file, without modifying the original file or modifying the index file, by pulling down the Database menu and selecting Sort. A Sort dialog box pops up and allows you to specify the desired sort field and indicate whether you want your new file sorted in ascending or descending order.

INTERFACE, OUTERFACE

FoxBASE+/Mac's interface will largely determine its success with existing Macintosh users as well as with PC users who want to upgrade to the grace of a Macintosh. A not immediately obvious but nonetheless major strength of the interface is its integration of dBASE programming right into the Macintosh interface. All your interaction with the interface is translated into a structured dBASE program that can be viewed in the Command window. That program can then be edited, commands can be executed by clicking on them with the mouse, or the program can be saved to a file.

Fox is distributing their version of the full Macintosh interface in three parts. The initial release (reviewed here) includes all the central functionality of the database. The first of two planned updates will contain LAN support for mixed Mac/PC networks, a MacPaint-like forms generator, and a template-driven code generator. Fox promises a dBASE IV report writer with a full Macintosh interface in their second update, hopefully later this year.

The MacPaint-like forms generator is sorely missed now, because the necessary hard coding of screens is not easy and is time consuming. Report generation is neither intuitive nor easy with this release and will not be improved until the second of the planned updates.

However, the interface is standard Macintosh where it counts and also provides numerous power-user shortcuts. For example, there are four ways to access the Browse window. Sophisticated users have a wide range of interface options. The rough edges currently in the interface will mostly bother the application developer who is looking to control, modify, restructure, cannibalize, or replace parts or all of the interface in a dedicated application.

Basic database manipulation with FoxBASE+/Mac is a snap. Many users will never need to go beyond the basic skills already implemented. However, the real strength of any complex database application lies in its ability to foster and create applications. The best way to assess FoxBASE+/Mac's strength in that regard is to take a look at it in action.

A DAY IN THE LIFE

Assume you are a database-application programmer in a hypothetical MIS department that uses SBT's A/R system. The collections department has asked MIS to enhance the A/R collections capability. The collections manager wants the system to automatically print three different collection letters based on days past due and doesn't want to be forced to fiddle with exporting data files to a mail merge/word processing system. She also wants a status report giving the date that each letter was sent and requires that the system guarantee that dupli-

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The standard SBT A/R menu of its FoxBASE+/Mac version has been modified to support a collections package enhancement.



The existing FoxBASE+/Mac Report Writer is the vanilla dBASE III PLUS product. It features on-screen format preview. A collections letter is being displayed.

cate letters will never be sent. It is almost noon Friday. You no sooner get back to your desk than you get a call from the V.P. of Operations. This modification has to be up and running for Monday morning.

Start by printing the A/R file descriptions and the source code listings for the A/R system (SBT supplies source with its product) so you can study them over a quick lunch. Start the actual project by creating a collections file and linking it to the customer file and the accounts receivable file in the A/R system. Pop up the Expression Builder and create a relation between the two A/R files based on the common customer number. Next, pull down the Database menu and click on Copy, which allows you to select only the fields from the two A/R files that are needed for the new collections file. Also specify a filter that will copy only the records of the customers with past-due accounts into the collections file.

Next, the menu of the A/R system must be modified to let the users print the collection letters and the status report. Application code must be triggered by the A/R menus to control the data flow, select printers, and do all the other goodies that the collection users expect. The Command window displays the program that opens the two A/R files, sets the relation between them, and exports the appropriate data fields of the appropriate records from these two data files into the newly specified collection file. The program has been written automatically by FoxBASE+/Mac.

After transferring this program to the Edit window, you can attack your skeletal program with FoxBASE+/Mac's powerful editing facility. Open seven panes in the Edit window and load an SBT source file containing code from applications that resemble your current requirements into each pane. Powerful search commands isolate the appropriate sections of code relating to procedures, memory variables, and the other elements you need from these programs. Open an eighth pane and copy and paste code sections into it from the other panes.

Now modify the SBT A/R menu structure to include your Collections Letters and Status Report menu additions and submenu screens. The code that drives the application is similarly cut and pasted, and a new program of 2,000 lines of dBASE code is finished. The Macintosh interface's multiple windows combined with FoxBASE+/Mac's editing refinements (such as a triple-click to highlight an entire line) make this easy.

The next step is to create a file to contain the collection form letters. FoxBASE+/Mac supports a memo field type (with unlimited text length) so the file needs to contain only one record, which will have three fields, one for each letter. The Report Writer lets you produce the status report in just a few more minutes. The collection letters require you to merge the appropriate data elements from the collection file into the appropriate form letter and cycle through each customer record to verify what letter, if any, needs to be printed. Unfortunately, the Report Writer does not yet have a Macintosh interface, so you have to figure things out the old-fashioned way — which is a pain.

It's already final testing time. The last thing you need is to get behind on Monday because your program has bugs, so you now use FoxBASE+/Mac's debug facilities to simplify that "last 10 percent of the job but 90 percent of the effort" task. A trace window displays the source code as it executes. You can single-step the program through the rough spots and call up the Edit window right on the spot to fix the code. Breakpoints check out procedures and loops and many a tricky little bug gets trapped by a programmable breakpoint. You can open multiple windows to watch more than one process at a time as you hurry down the home stretch.

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in the collections department can access your new product. You control the server from your Macintosh and set up the new application. Call the collections manager and ask her to check out her new program.

This was a simple job for FoxBASE+/Mac. An ace programmer will want to use some of FoxBASE+/Mac's power features — like the Help database, memory-variable arrays, user-defined functions, and the capability to store graphics and even use them in a menu to replace a text button.

END RESULTS

This example demonstrated some of the features that make FoxBASE+/Mac a superior development environment for the professional programmer. No matter what level of database complexity you require to solve your information storage and retrieval requirements, if you like dBASE and have a Macintosh you are going to love FoxBASE+/Mac.

If you don't like dBASE, this program just might change your mind. If you don't know anything about dBASE, you may be in for a pleasant surprise.

At press time, Fox was offering a free demonstration copy of FoxBASE+/Mac. If you found the foregoing interesting, get one and draw your own conclusions.

FoxBASE+/Mac sports an impressive list of features that sit on a database engine that's rock solid and bulletproof, and its performance is one of the best in the Macintosh database business.

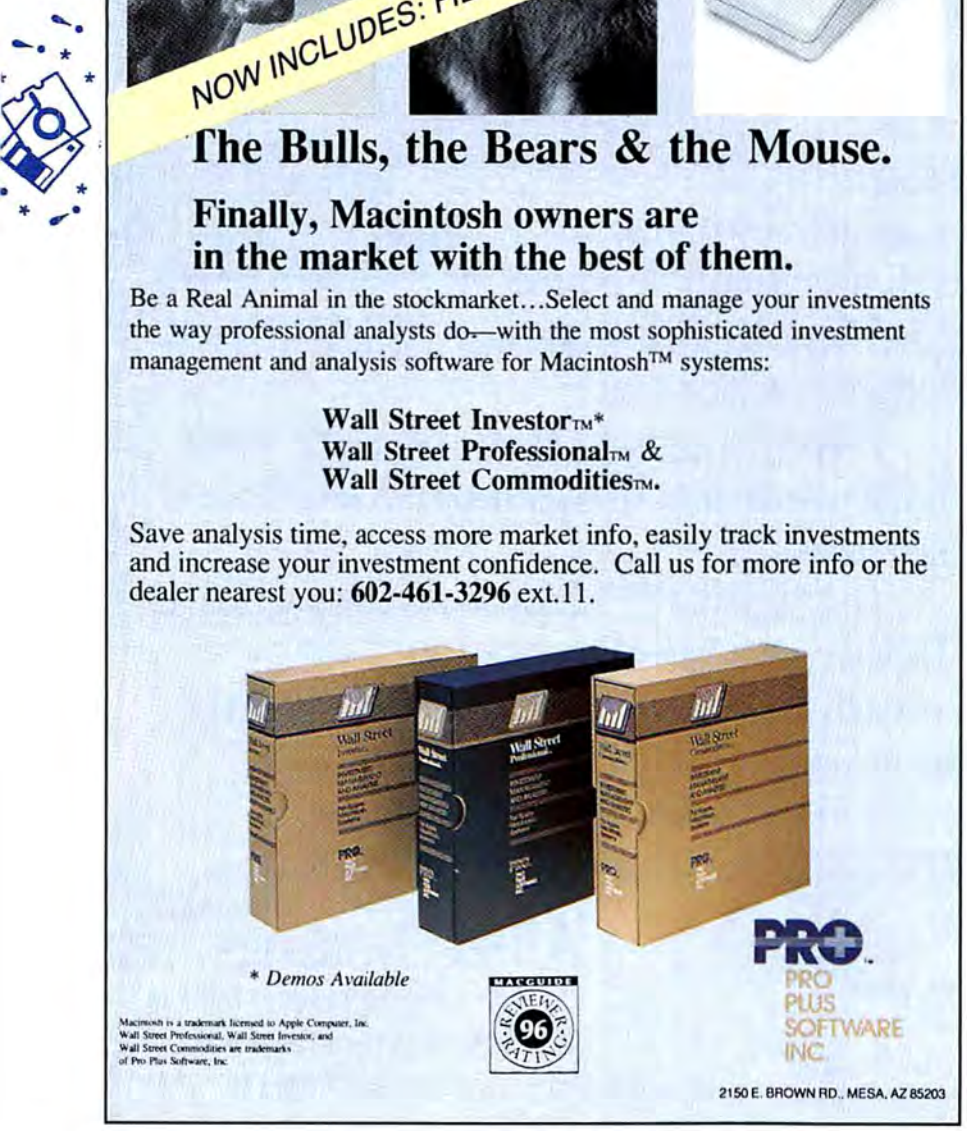
RICHARD SKRINDE IS AN INDEPENDENT JOURNALIST AND CONSULTANT SPECIALIZING IN DATABASE PRODUCT TECHNOLOGY AND ITS APPLICATION TO VERTICAL MARKET INDUSTRIES.

MACUSER RATING

FoxBASE+/Mac ★★★★½

Follows Mac Interface	■ ■ ■ ◧ □
Printed Documentation	■ ■ ■ ■ □
On-Screen Help	■ ■ ■ ■ ◧
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Comments: FoxBASE+/Mac is a complete applications development environment. It features blazingly fast operation and good dBASE compatibility. **Best Feature:** The extensions to dBASE and the bonding of these extensions into an interface that can be used in many ways — from a Macintosh interface to a more traditional dBASE approach. **Worst Feature:** The release of the interface in segments leaves serious gaps for early users. **List Price:** $395 with a one-time application run-time version distribution royalty of $300. Published by Fox Software, Inc., 118 W. South Boundary, Perrysburg, OH 43551; (419) 874-0162, ext. 980. Not copy protected, but does require entry of activation code upon installation. Mac II and MultiFinder friendly.



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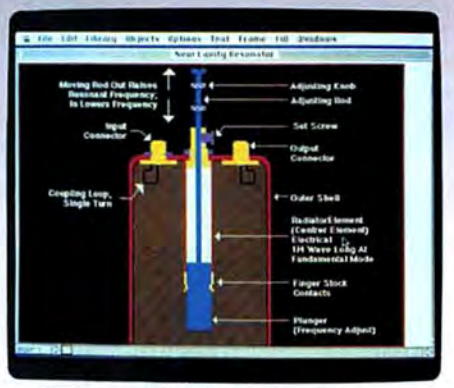
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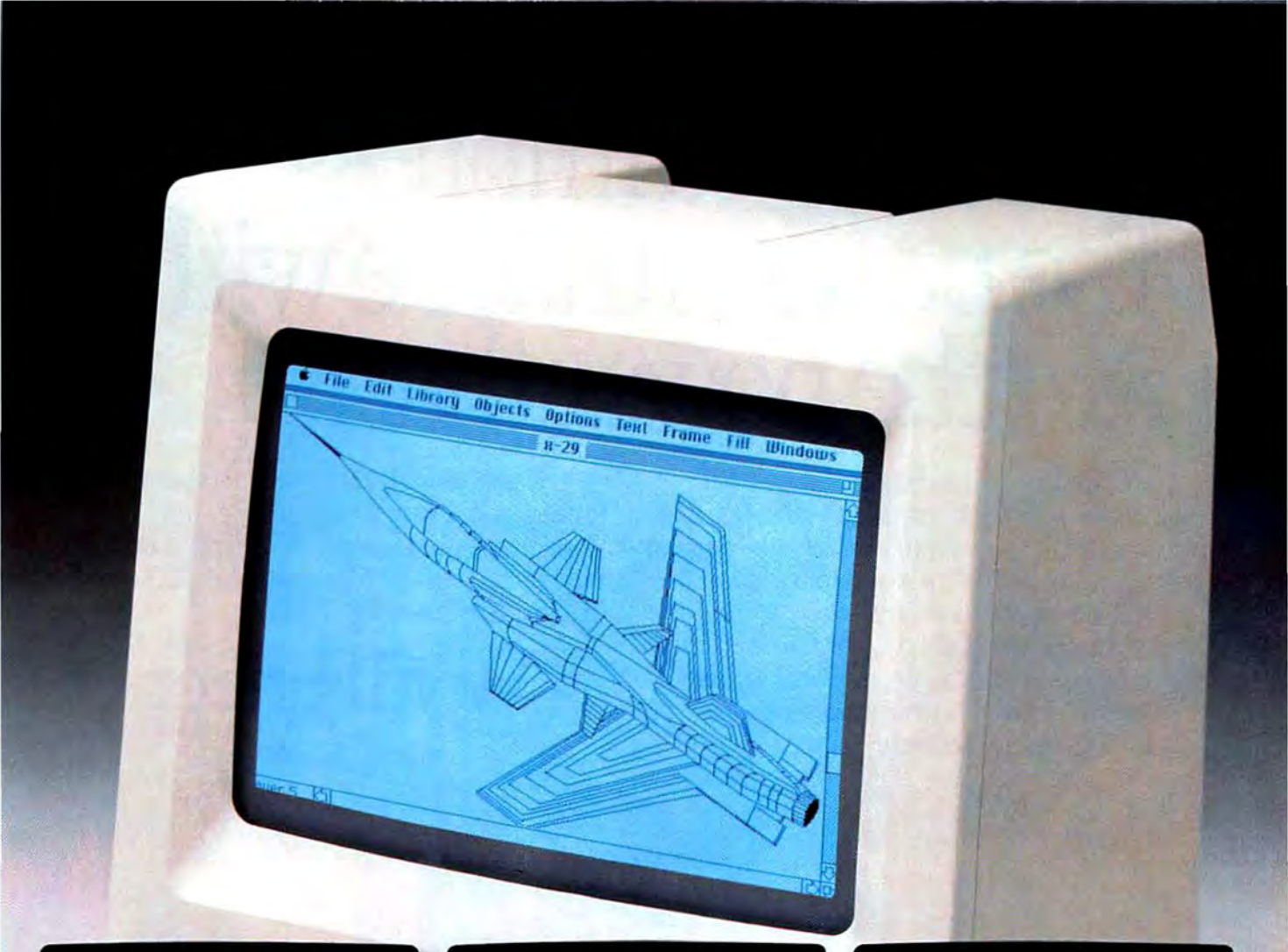
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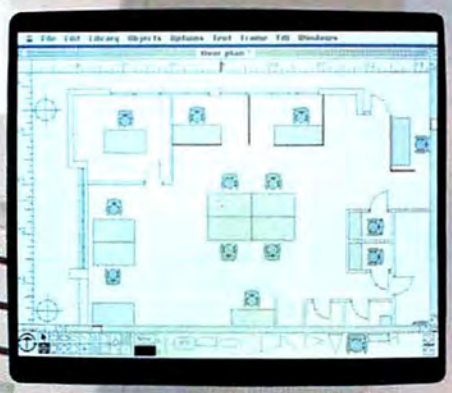




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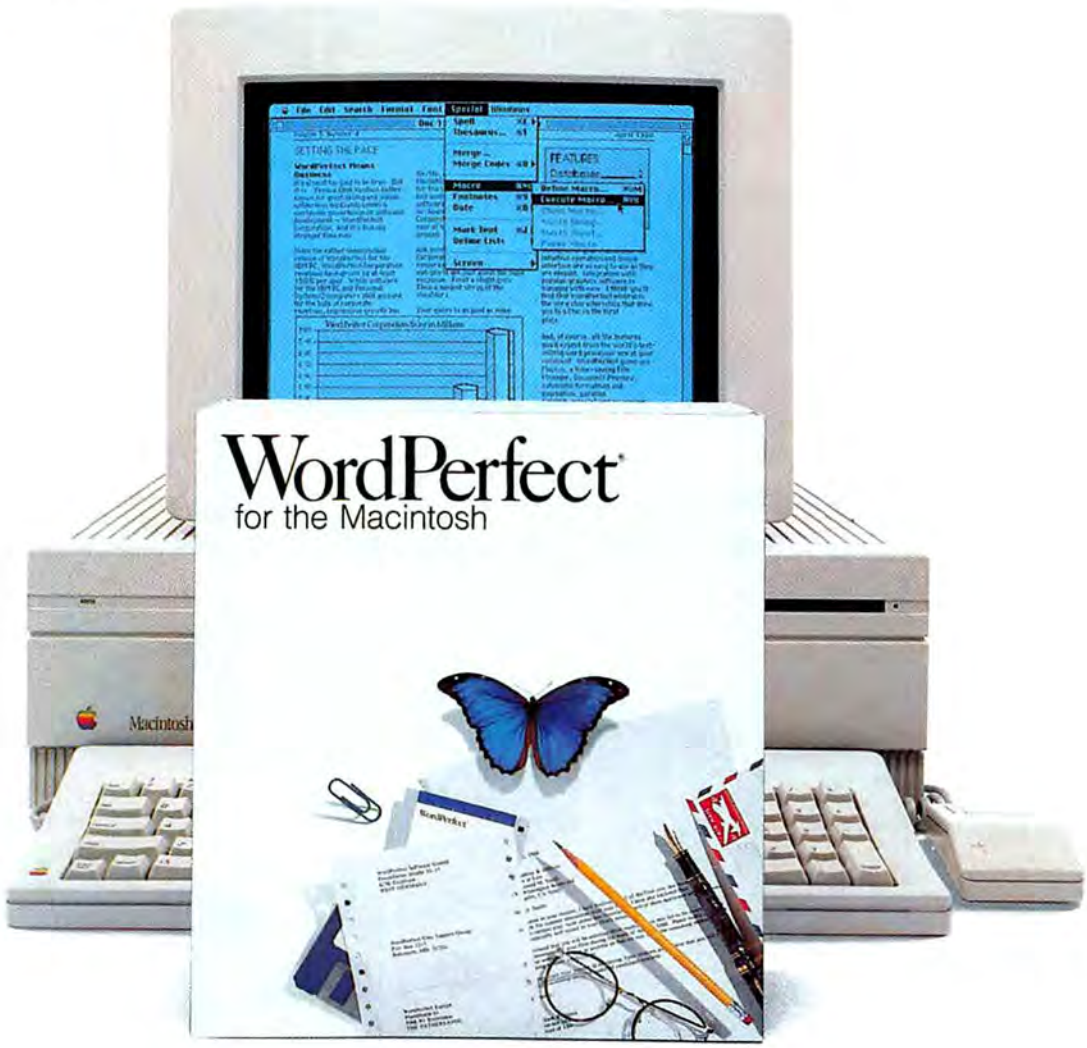
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THE HELP FOLDER

BY CHRIS ESPINOSA

Got a Mac problem? Something you'd like explained? Something you can't find the answer for anywhere else? Apple's Chris Espinosa will answer your questions every month in this space. When the questions are too tough or too esoteric for him, he'll get the answers from other members of the Mac team. So ask what you need to know and get your answers straight from the source!

Send your questions to Chris care of MacUser, *950 Tower Lane, 18th floor, Foster City, CA 94404. Chris will read all your questions, but, unfortunately, he may not be able to answer individual queries.*

IN THE MAILBAG

Half a dozen readers wrote to confirm John Lindgren's report of vanishing ImageWriter files (June '88). Wayne Higdon of Saratoga Springs, NY, reports having them disappear "during a session" but that copying new drivers into the System folder seems to work. Steve Stark of Seattle has had them disappear as well, and Autumn Efred of Ansonville, NC, reports the files vanishing from Word as well as Write. Donald Cooley is the only one so far to have noticed it in System file version 4.2; the others found it only in 3.2.

Ronald Andring of Walla Walla, WA, thinks it's due to powering off while MacWrite is still open and shows an open document. He instructed a friend to close MacWrite before shutting down and claims that the problem has stopped happening. If any readers have success with this method, let us know.

Dave Duke of Fremont, CA, sends along a new advertisement from Olduvai Corp., 7520 Red Road, Suite A, South Miami, FL, that describes a new product, ADBridge, that solves Eliot Friedman's problem from the June issue. It lets you connect non-ADB peripherals — such as the mouse and keyboard of the Macintosh Plus — to the Macintosh SE and II, and also lets you use new ADB peripherals on the Plus, 512KE, and Macintosh 128 CPUs. Olduvai can be reached at 1-800-822-0772. [*Editor's Note: We just spoke to Olduvai and they reported some delays in the neat-sounding ADBridge. It's been delayed but might be available very soon.*]

MY MISTAKE

For the first few columns I got to poke fun at our now-departed Msr. Cochran about fixing his mistakes — now I get to correct my own. Right, right, the SE ROMs don't contain the Script Manager (it's in the System file) nor does the SE itself use the Apple Digital Sound Processor chip (it uses the same analog chip as the Mac Plus; the digital chip is only in the Macintosh II).

HEX DUMPS

Q. I own a Mac Plus with two disk drives, an Apple modem, and an ImageWriter. Recently, I experienced some strange behavior from my ImageWriter. On two separate occasions, when attempting to print out a MacWrite document and a MacPaint document (in the conventional manner, choosing Print from the File menu) my ImageWriter, produced what looks like hexadecimal numbers as output. After turning the printer off, then on again, I retried the procedure, which seemed to work. Is this a warning sign from my ImageWriter or is there a problem with my Mac?
CHRISTOPHER ROCA
PORT CHESTER, NY

A. There's an obvious explanation, but this crops up so much that I'm beginning to look for other reasons (or at least ways to make it happen less often). For debugging purposes, the ImageWriter family of printers have a mode in which they print the entire data stream to the printer in hexadecimal (computer numbers) rather than the text and graphics that the data stream represents. This helps the developers of our printer drivers debug the software and also helps service personnel figure out whether a printing problem is in the computer, the printer, or the connection. This special mode is invoked by holding down the Select button while turning the printer's power on.

I think that people who get this effect are just accidentally leaning on the Select button while turning on the power. So my advice is to keep your fingers clear of the Select switch while turning the power on, and if this problem does occur again, just turn the printer off, then on again. But if anybody's seen this happen repeatedly without holding down the Select switch, please let me know — there might have been a faulty batch of Select switches.

VERY SLOW DESKTOP UPDATE

Q. With the addition of an external 20-megabyte hard disk to my Macintosh Plus, I have begun to experience the common problem of very slow copies because of the lengthy desktop update. A small 26K application takes about 1 second to copy to the hard disk, but 30 seconds for the desktop update! This is most frustrating.

I have read in this magazine that the time can be reduced by using the Desktop Manager from AppleShare, but the writers always add the caveat, "This is not a recommended procedure; do it at your own risk."

We own AppleShare and would like to try this procedure. But first, does Apple

recommend it? If not, does Apple have some Finder update planned to alleviate this problem?

A. BRUCE JACOBS
FARGO, ND

A. A number of things could cause a slow desktop file update, and there are a few tools already available in the Macintosh System software (System software version 5.0 and later) to take care of most of them.

First, it could be that you have a *lot* of applications on the disk. The desktop file tells the Finder what icons go with what documents and applications and what application to launch when a file is double-clicked, so its size grows with the number of applications you have, and it needs to be updated whenever you add another application. But 30 seconds is a long time to update.

Make sure your hard disk is formatted for the hierarchical file system (HFS). The way to tell this is to look at an open window in the Finder. In the double line at the top of the window (below the number of items and K in disk listings), the extreme left edge of the double line should be darker — if it's HFS it has an extra pixel between the lines — than the right edge. This indicates an HFS-formatted disk. If the left and right sides look the same, then the hard disk is formatted for the Macintosh File System, the "flat" file system that was used for 400K floppy disks but is really slow on large hard disks.

Here's the solution: Back up all files, erase the disk, and reformat it with whatever formatting utility came with it, following the manufacturer's instructions to get an HFS volume.

If that's not the problem, use Apple's Disk First Aid program (part of System Tools version 5.0 and later) to check up on the general health of your disk. It'll fix certain kinds of damage.

Then restart your system, holding down the Option and Command keys while you start up. This will rebuild the desktop file from scratch. It'll take a while, but it should make subsequent desktop updates faster. Don't use the AppleShare utilities on anything but an AppleShare volume.

SCRAPBOOK DOESN'T PASTE

Q. Very often, when I try to add some new item to my Scrapbook, it doesn't take. That is to say, something else will end up as a new entry into my Scrapbook. As often as not, it will reproduce a copy of one of the other items in my Scrapbook.

Here's an example: I keep a copy of a small list of names that has to be updated monthly. I copy the present list from the Scrapbook to a new document — such as a memo written in MacWrite or Note Pad+. I update the list, copy it, and then

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"paste" it into my Scrapbook. But the new list doesn't get added to the Scrapbook; the old list is repeated! To make things more confusing, I have "pasted" several copies successively and suddenly one of them is the one I have been trying to add from the beginning. However, this trick doesn't work all the time. The net result is that I have a Scrapbook that is difficult to update.

BERNIE ZIONS
RYE, NY

A. This is a bug that's present in the Macintosh 512KE and Macintosh Plus ROMs. System file versions 3.2 and later include a "patch" to the ROM to fix this bug; if you're using the earlier System file versions 3.0 or 3.1, upgrade to 3.2 or later.

WHITHER MULTIFINDER AND COLOR?

Q. I recently bought a Mac II with a color monitor, a 40-megabyte internal hard disk and 2 megs of memory. It makes my Mac Plus seem like a dinosaur. I have installed the Mac II System software using the Installer and have selected the 16-color mode using the Control Panel. My Apple menu then appears in color, but nothing else is. When I visited my dealer, the file folders were also in color. I have asked my dealer why the difference, and his only suggestion is to reinstall the System. In addition, everyone seems to be talking about the MultiFinder, but my Finder seems to be the same as it always was. I am using the Finder that came with the Mac II, but it certainly does not have any of the features I have been reading about. The Mac II manual has nothing to say on the subject either. Can you help?

WALTER WILLIAMSON
ATLANTA, GA

A. In the race to market, the Macintosh II beat MultiFinder by a few months, so some moderately large number of Macintosh SEs and IIs were shipped with Finder version 5.5 and no MultiFinder. In late 1987 we started shipping the System Tools version 5.0, including MultiFinder, with every Macintosh and offering it as a $49 upgrade to any and all other Macintosh owners. Your Mac II must have been packed in that window, and your dealer should have known to give you the 5.0 System Tools with MultiFinder when you asked for it. The Finder in that package, version 6.0, supports color on color monitors, and it includes the MultiFinder and Print Monitor for using multiple applications at once and printing in the background.

Now, of course, System Tools version 6.0 is available, which fixes some incompatibilities and bugs with 5.0 and adds MacroMaker, a tool to put the

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function keys on your Extended Keyboard to good use. So go on down to your dealer and pick up the 6.0 software package.

SPEAKING OF MACROMAKER

Q. I write a lot in Spanish, and having to use Option-E followed by the vowel every time I want to stress a letter is cumbersome and slow. How can I create a stress key in a comfortable position on the keyboard (to the right of P, for example) that allows me to stress any letter by just hitting the key before the one to carry the stress? Alternatively, do you know of any software able to change the keyboard layout to the Spanish way? This is very easily accomplished in MS-DOS by using the Keybdsp command before loading your application.

JOSE E. ALES-MARTINEZ
ROCHESTER, NY

A. Using MacroMaker, a new desk accessory included in System Tools version 6.0, you can redefine any key or key combination on the keyboard to mean something else. So, for example, you could redefine the 15 function keys along the top of your Extended Keyboard to be all the accented characters you usually use, or just redefine the right bracket key to be option-E to do as you suggested.

Another possibility is CE Software's QuicKeys. For more information on this $99.95 (list) program, contact CE Software at P.O. Box 65580, West Des Moines, IA 50265 or call (515) 224-1995.

Macintosh software supports keyboard remapping, but not in the same way as MS-DOS. Caribbean Computer Export, 830 Northeast Pop Tilton's Place, Jensens Beach, FL 33457, is providing Spanish-language software for North American customers; drop them a line or call them at (305) 534-3430 to see if they have a ready-mapped Spanish keyboard map.

AND SPEAKING OF ACCENTS

Both Todd Stubbs of Orem, UT, and David Macfarlane of New York, NY, offer a Word 3.01 solution to Carl Boyd's problem that was covered in the June issue of typing overbars over Romanji characters.

Todd's solution is to use the Word built-in formula mode to overstrike the characters. By typing \o(¯o) into Word 3.01, where the backslash is actually a Command-Option backslash and the overbar is created with Shift-Option comma, this overstrikes the lowercase *a* with the overbar. Though Todd says you have to choose Show ¶ to see it, in my version it showed up immediately.

Note that the overbar character is only present in LaserWriter fonts (such as Times and Helvetica), not

It Took An Advanced Drawing Program To Create This Art.



the Macintosh fonts. To get such overbars in New York and Geneva, David Macfarlane recommends the lengthier formula \o\ac(a, \s\up5(-)) with each backslash being a Command-Option backslash and the dash being either a hyphen or a long dash (Option-hyphen). David suggests that it's necessary to force the line spacing to the desired amount by using a negative amount in the Paragraph dialog box. Otherwise, the superscripting of the overbar causes extra line spacing on every line with the overbar in it. Of course, once you get what you need, you can add it to the Word glossary and recall it quickly or use MacroMaker to assign it to a function key.

IT'S A SONY — BUT WHICH ONE?

Q. I have a Sony Trinitron CPD-1201 color monitor with analog and digital capability. Is there any way to make it work with my Mac II with its 256K color video card? The specs are: resolution 800 by 240 dots, scanning frequency vertical 50/60 Hz, horizontal 15.75 kHz.
ROCK LARRABEE
ST. CHARLES, IL

A. The Macintosh II video card works with monitors with a minimum 35-kHz horizontal sweep rate, such as the Sony CPD-1302 Multi-Scan monitor. It will not work with the CPD-1201. Other models it will work with include the Mitsubishi Diamond Scan AUM-1371, the Thomson 4375M Ultra Scan, the Taxan Super Vision 770, the Teknika MJ-503, the NEC JC1401P3A, and the Electrohome ECM 1310. Your Apple dealer or user group can get the addresses of these manufacturers and cable wiring diagrams for these monitors from AppleLink (search the Technical Archives for "Macintosh II and monitor").

MACCING WITH THE HEARING-IMPAIRED

Q. I am trying to find out if there is a way for a Mac Plus to emulate a TDD (Telephone Device for the Deaf). My brother lives in Los Angeles and has a TDD. It is simply a keyboard, thermal printer, and acoustic modem. Anyway, I'm looking for a software solution for this dilemma, since I already have a modem. My communications software currently consists of a Microsoft Works module. If there is anything out there that will facilitate a communications link between my Mac and my brother's TDD, please let me know.
MARK SEXTON
TACOMA, WA

A. TDDs started being distributed in the mid-1950s, when the ASCII standard started replacing the previous Baudot code for communica-

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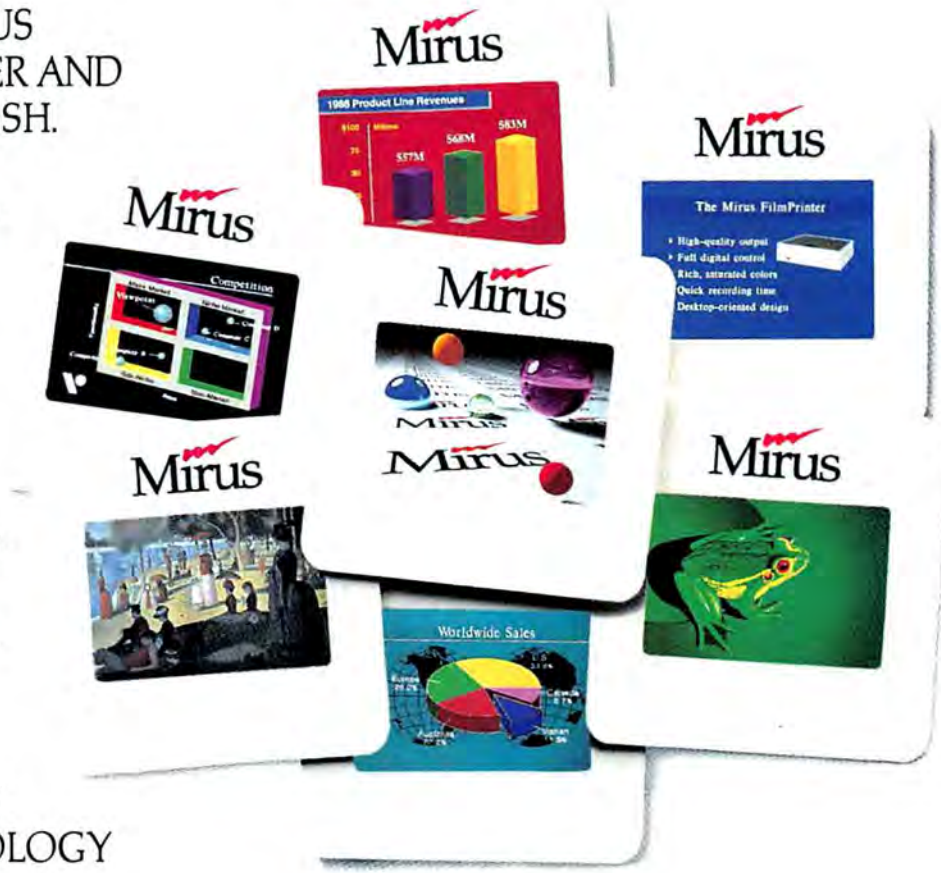
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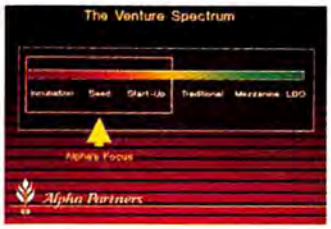


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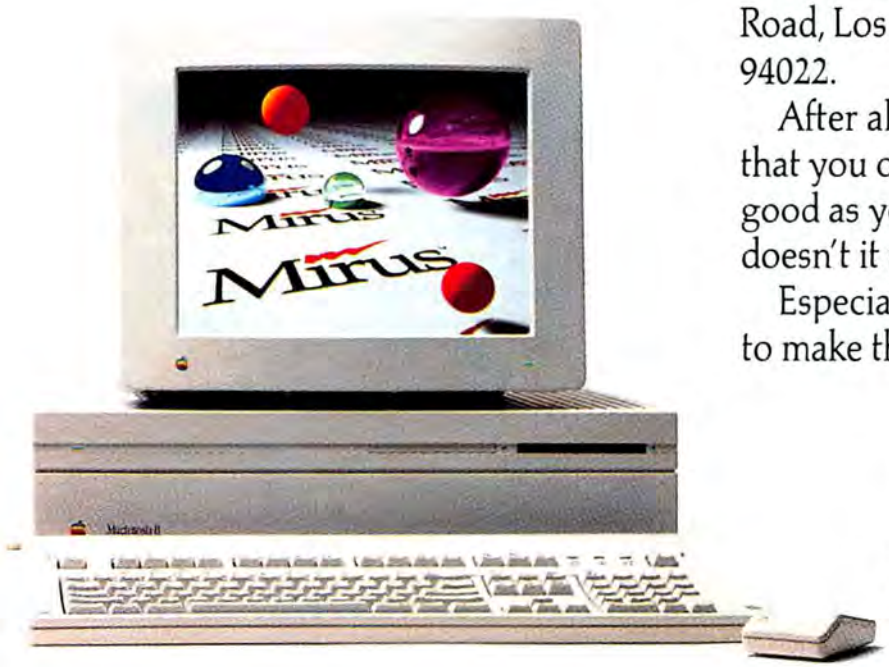
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tions. So the TDD network was set up on the older, obsolete 5-bit standard, incompatible with ASCII, simply because there were a lot of Navy-surplus 5-bit teleprinters to go around. There's been some progress to bring the TDD network into the present, and it's ironic that non-hearing-impaired people using ASCII terminals and modems are better-connected to written information than the pioneers in nonaudio telephony.

If your brother's TDD is ASCII, you're in fat city; run your software, set your modem to auto-answer (check its manual to see how) and have your brother dial you up. But if he has the Baudot equipment, there's no software solution.

There is a hardware solution, though. The SM85 Smart ASCII/Baudot Modem is a modem that allows devices that communicate in standard computer ASCII code to communicate with TDDs, which commonly communicate in Baudot code. The SM85 Modem receives an incoming call, determines whether the call is in ASCII or Baudot code, and responds accordingly. The messages are relayed to the user's computer (or other ASCII terminal) in ASCII code. The user's responses are translated into the correct code for transmission to the caller, so you can use the one modem for both the TDD calls and your other ASCII calls, though its speed is limited to 300 baud. The SM85 connects to the phone line with a standard modular phone jack; connection to the computer is by an RS-232 serial port, so you'll need an adapter cable for the Mac Plus's mini-8 connector. Contact Krown Research, Inc., 6300 Arizona Circle, Los Angeles, CA 94005; (213) 641-4306.

FOILED BY A MISSING SWITCH

Q. In January I purchased a brand-new Macintosh SE, and I was so overwhelmed by the fantastic software out for the Mac that I was completely consumed for months. Later, though, I thought I would put my programming knowledge in C to use, and purchased Light-Speed C. Finally, in their directions, I found out what the little piece of plastic was I had put aside when I had originally put my Macintosh together. That little piece of plastic is the programmer's reset button. Wow! It is something I can install myself. I went to find the little piece of plastic and it was lost. Since then I have been trying in vain to get my hands on one of these. I wrote Apple and they treated me like IBM. I went back to the computer store where I bought the machine, and they had none and no advice. I checked with BCS, the local user group, and found that I may never be able to replace this ten-cent piece of

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BOSTON, MA

A. Ten cents it's not, but go back to the dealer and ask for service part 815-1008, the Interrupt/Reset Switch for the Macintosh SE. It shouldn't set you back too much, depending on the dealer's policy.

The switch lets you do two things: one, interrupt execution of a program and drop into a debugger to look at memory and see what's happening inside your program; and two, reset the computer when a not-yet-bug-free program gets out of hand and threatens to take over Tacoma. Similar switches are shipped with each model of the Macintosh. Unless you're debugging software, I'd steer clear of them — they protrude from the ventilation slots near the base of the machine (on the left of a Mac SE, Plus, and 512KE, the right of a II) and are notoriously easy to bump or poke accidentally. This has the same effect as turning off the machine and has caused many a lost term paper or business plan.

DATA IN, DATA OUT

Q. I would like to interface two RS-232 devices to my Mac, using the printer and modem port. (My Mac is a 512KE, with the 9-pin connectors.) I would like to have a data file on the Mac and write a program (preferably in BASIC or FORTRAN) that would read two values from the data file, write one to each device, pause, and repeat. Is this possible? I presume it is, but in what language (and whose implementation of it) would this be most easily accomplished, taking into account the non-standardness of RS-232 and its associated communication protocols?

Would this be easier if I used a Mac II with a NuBus expansion board?
KEN AKERBOOM
LATROBE, PA

A. Your Mac 512KE should be up to the task — its two RS-422 ports are compatible with RS-232, and its System software will take care of the RS-232 communications protocol. In fact, I don't even know of a NuBus card for the Macintosh II that has two RS-232 ports on it.

First, you'll need cables to connect the Mac to the two devices. If they're DTE (Data Terminal Equipment) devices with a 25-pin socket on them, a couple of ImageWriter Accessory Kits for the Macintosh should do nicely. Then for software, either Microsoft BASIC or Microsoft FORTRAN will do the job — both have commands for setting up the proper baud rate, parity, and so on of the ports and sending data. You'll need to know what

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speed and format the devices are expecting.

WITHOUT VISUAL EFFECTS

Q. My Mac II won't do any of the visual effects of HyperCard (except "Flash"). The same stacks that display the visual effects on my Mac Plus do not work on my Mac II. At first I assumed that the Mac II was simply incompatible, but now I've read several references to visual effects working on the II. Why won't they work on mine?

BOB SIMMONS
LA JOLLA, CA

A. Use the Monitors icon in the Control Panel desk accessory to set your monitor to two-color, black-and-white mode, which is what makes HyperCard work best. Your visual effects should show up fine.

TERMINATION BLUES

Q. I have a Mac Plus hooked via SCSI to a SuperMac Technology DataFrame hard disk. I bought a LaserWriter IISC and plugged that into the second SCSI port on the hard disk. The instruction manual for the LaserWriter IISC stressed putting a SCSI terminator into the unused SCSI port on the printer. With a terminator in place, the hard disk will not boot (it's my startup disk). If I boot and then slap on the terminator: bomb city.

Things run almost fine without it. I'm a writer and run Word 3.02. When I use Page Preview it cycles through every page in the document twice before giving me the windows. Once in Page Preview, it runs through every page again if I try to move from one page to the next. Since I'm dealing with 30-page documents, this is a pretty time-consuming process.

When I try to use Findswell, which worked fine before I added the SC, my hard disk whirrs for about five minutes. It will perform no other functions while file searching.

Microsoft says call SuperMac. SuperMac says call Apple. Guess what Apple says? Could these symptoms be terminator-related? Why won't the XP30 boot?
DAVID MEYER II
SEATTLE, WA

A. If you send an electrical signal down a long wire, it'll actually "bounce" back when it reaches the other end. If the signals are being sent at high speeds, the bounces get in the way of the original signals, and something in the middle of the wire has trouble telling the real signals from the reflections. So you have to terminate the wire. One way to do this is to put something at the end to absorb the signals so they won't reflect. The SCSI Terminator is a terminator for the SCSI cabling system, just as the AppleTalk System Connector is a ter-

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minator for AppleTalk. You need to have a terminator at the end of any chain of SCSI devices. Otherwise, system performance will suffer — for example, in your case, the "bouncing" signals are confusing the hard disk, making it perform the same commands many times before the data is communicated completely to the computer. That's why things seem so sluggish.

So why doesn't it work when you do the right thing, adding the terminator? Because terminators are a real hassle — forget to bring one along with you and your hard disk won't work at all — some manufacturers, notably SuperMac, build terminators into their hard disks. So when hooking up a DataFrame to your Mac Plus, you didn't need a terminator and didn't care: It was built in. But when you added another device, you then needed a terminator. But with two terminators, the signals don't even get where they need to be in the first place.

The solution is to hook the Mac Plus to the LaserWriter IISC and hook the LaserWriter IISC to the DataFrame so the terminator inside the DataFrame is where it belongs: at the end of the SCSI chain.

As long as you keep adding SCSI devices between the Mac and the DataFrame, everything should be cool. If this doesn't work, have the dealer that sold you the SuperMac pull the termination resistors. Then you can start using an external terminator on the last device in the SCSI chain.

MYSTERY ICONS

Q. While browsing through Finder 6.0 with ResEdit, I found two ICN#s without apparent meaning. I am referring to #135 and #136. #136 is a folder with an arrow pointing to it, and #135 is a folder with a darkened tab.

What are these for and is there some way I can invoke them?

ERIK PETERSON
TORONTO, ONTARIO

A. Both icons represent folders with restricted access privileges under AppleShare.

The one with the darkened tab represents an "owned" folder on a file server, which means that you control the access privileges to it and can make it accessible (or inaccessible) to any other users of the file server.

The one with the arrow represents a "drop" folder, that is, a folder that you have write-only rights to: You can save or copy files into that folder but you can't open it and see what's in there. That's for electronic mail or submitting personnel files or other private communication.

These icons only show up on disks that are shared among many users with AppleShare.

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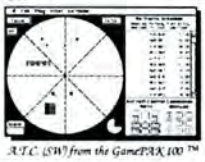


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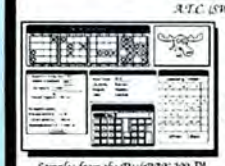


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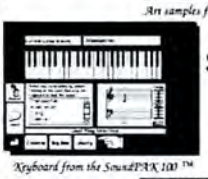


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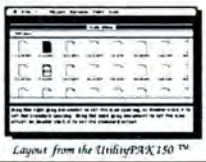


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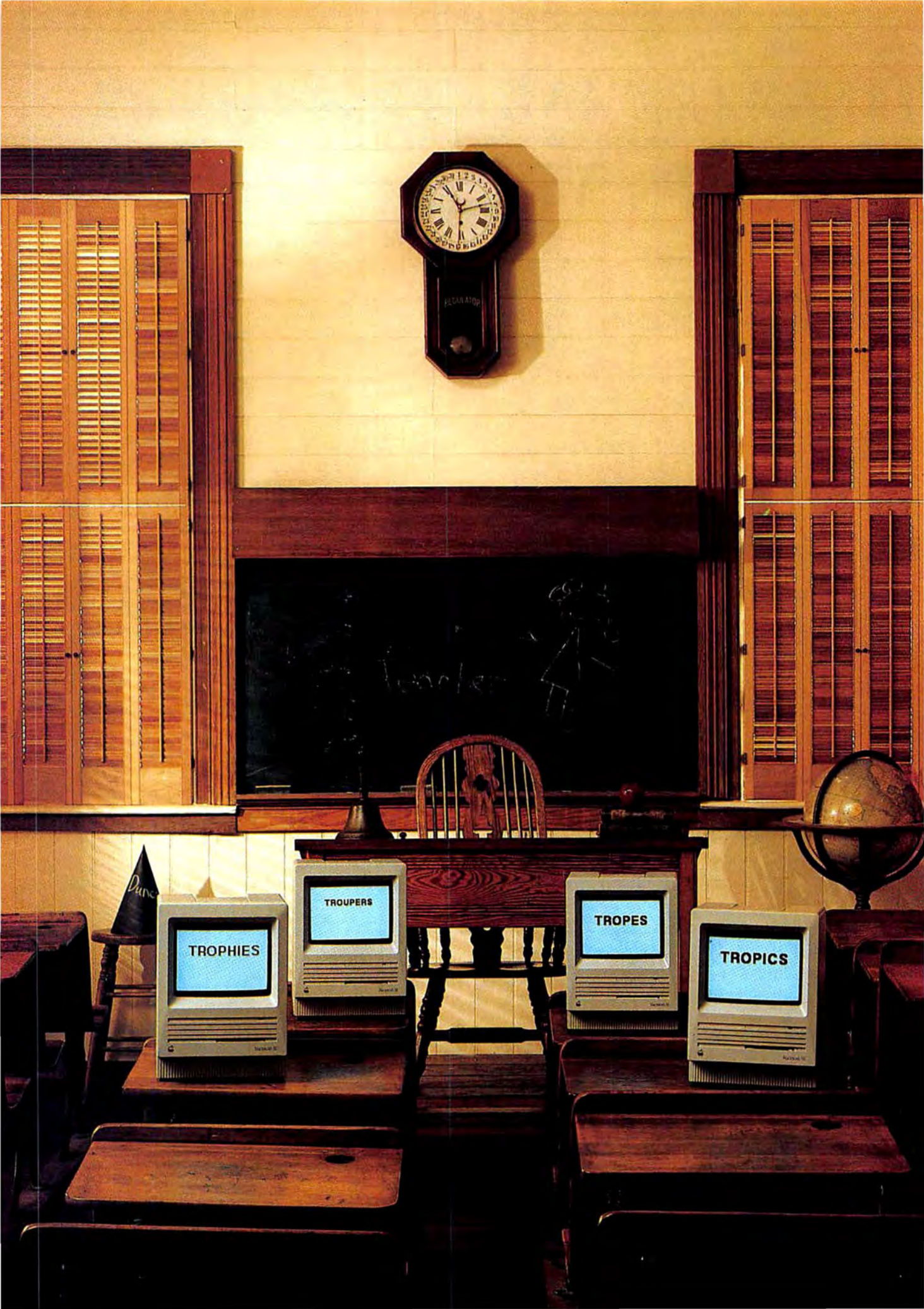
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Checking Spellers

Spelling ain't what it used to bee. If you could use a little help, check out these four hot spelling checkers.

A spelling checker captures the essence of computer software — fast, tireless, consistent (sometimes to a fault), and devoid of intelligence. It may not understand what it's doing, but a good spelling checker can perform the otherwise time-consuming job of proofreading in minutes, and, unlike me, it doesn't forget words or have trouble focusing on the page at the end of the day.

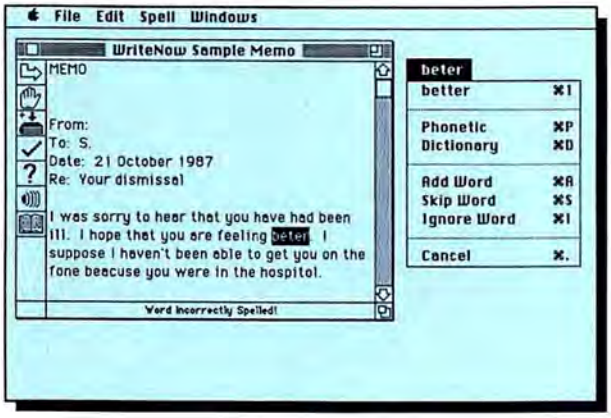
BEEP, BEEP, BEEP, BEEP

There are two ways to check spelling: interactive and batch. Most interactive spelling checkers come in the form of a desk accessory (DA), sitting quietly in the background while you write, checking each word you type against its dictionary, and beeping if it doesn't recognize a word. If you ask, it offers suggestions for the correct spelling. You can substitute one of the suggestions for your misspelling, or you can tell the checker to ignore the flagged word (if, for example, it was correctly spelled and just wasn't in the checker's dictionary).

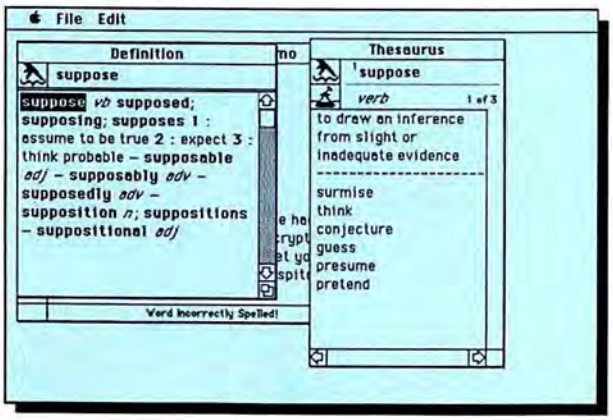
A batch spelling checker, on the other hand, checks your whole document at once — or a selection from it — after you've finished writing. The checker reads the document, checks the words against its dictionary, and shows you the ones it doesn't recognize (one at a time) with suggestions. Batch spelling checkers are often standalone programs, but interactive DA spelling checkers can also work as batch checkers by checking all the words in a selected section of text.

Some word processing programs

BY TED SILVEIRA



In the window on the left, Coach shows the unrecognized word in context. In the window on the right, it shows its suggested spellings and the possible commands. Note the icons running down the left side of the context window. What do you think they mean?



Coach's definition window and thesaurus window can be on-screen at the same time. The window on the left shows the definition of a word selected in the text. The window on the right shows synonyms for the word selected in the definition window.

have built-in checkers. The spelling checkers in MacWrite 5.0 and FullWrite Professional can do both interactive and batch checking. Batch spelling checks are usually better for work that involves lots of thinking, rewriting, and editing, when there's no reason to worry about spelling every word right until the very last stage. On the other hand, interactive checking is valuable when revision is difficult or impossible but correctness is important — when entering data or writing electronic mail, for example — and is very useful for memos and other jobs that need to be done quickly without much rewriting.

Of the four programs reviewed here, Thunder! and Graham Speller are DAs that are primarily interactive checkers, but they can also batch-check selected text. Spellswell is a standalone program for batch checking only, and Spelling Coach Professional includes a standalone batch checker and a DA, for both interactive and batch modes.

AVOIDING BAD CHECKS

The most important job of a spelling checker is to catch all the misspelled words, so its dictionary must be accurate. It's almost impossible, though, to get the 70,000-100,000 words in a typical dictionary into computer-readable form without some errors — even Spelling Coach's dictionary, from Proximity/Merriam-Webster, has *ches* and a few other non-words.

A spelling checker can't spell; it can only check for words it doesn't recognize. That means it will flag properly spelled words that aren't in its dictionary as well as misspelled words. A large dictionary helps, but the words must also be well-chosen. Proper names and arcane words like *versipellous* will pad the dictionary's word count; it's more important to have common contractions along with plural and possessive forms of everyday words. Some spelling checkers also offer auxiliary dictionaries for fields that have specialized vocabularies, such as law and medicine.

Any decent spelling checker lets you add new words to the dictionary so that it will recognize them the next time. But the better the dictionary is to start with, the less time you'll spend teaching the checker the ins and outs of your personal vocabulary.

A spelling checker should also offer plausible suggestions for the correct spelling of a misspelled word. A good spelling checker should deal with transpositions *(wrod)* and common misspellings *(athelete)* and make some reasonable phonetic guesses (to get *phone* from *fone,* for example).

SPEED TRAPS

A good spelling checker should also be fast. It's impossible to get an absolute measure of the speed of a spelling checker because you have to interact with it. When the spelling checker shows you a word, you decide whether it's misspelled, ask the spelling checker for some possible spellings, wait while the program thinks, look over the alternatives it offers, select the correct one (or enter your own), tell the checker to substitute it, and then repeat the process with the next unrecognized word. In other words, *you* slow down the process by evaluating words while the program sits idle.

I timed the four programs while they checked a list of 1,735 different words that contained no errors or unrecognized words. The fastest were the three DAs — Thunder! (win), Graham Speller (place), and the Coach DA (show) — which gain some speed by copying the selected text to RAM, while the two standalone programs — Spelling Coach and Spellswell — have to read the file from the disk. Spellswell took the longest (about eight times longer than Thunder!); it sorts and processes the file before it shows you the first unrecognized word, a waste of time if there are no unrecognized words.

I also timed the programs while they checked a normal document (not a word list) of 2,630 words that contained several unrecognized words. As quickly as possible, I told each program to ignore each unrecognized word as it came up. In this test, the results were the opposite of the first

test, with Spellswell the fastest. Thunder! was particularly slow because it has the smallest dictionary (so it flagged more words) and because it offered several alternative spellings for each word instead of only one.

The situation gets even more complicated in the real world. For example, Spellswell immediately shows one possible correction for an unrecognized word, but Thunder! pauses to search for several possible corrections, so Spellswell is initially faster. But if Spellswell's first guess is wrong, you have to click the Guess button and wait while Spellswell works out some more alternatives, in which case Thunder! is faster, if one of its suggestions is correct. But Thunder! has a smaller dictionary, so it recognizes fewer words.... And bear in mind that picking a winner in the spelling bee depends on the user's typing and spelling skills and the breadth of his or her vocabulary as well as on the software.

COACH FARE

Spelling Coach, from Deneba Software, consists of a standalone spelling checker, a DA spelling checker, a 95,000-word spelling dictionary, and supplementary medical and legal spelling dictionaries. The Professional version also includes 85,000 concise word definitions and the ability to easily access them and a 245,000-synonym thesaurus with 16,300 unique words (see the sidebar "First-Class Coach"). You can also buy the thesaurus separately under the name Coach Thesaurus.

The Coach standalone DA checkers work almost identically, with the exception of interactive checking, which is available only in the DA. Both can check documents produced by MacWrite, Microsoft Word, Microsoft Write, Microsoft Works, WriteNow, MindWrite, MORE, and ThinkTank. Coach is also the only checker that can check Word 3.0X documents stored in its Fast Save format. Coach can make corrections while preserving style and formatting.

> In interactive checking, Graham Speller guesses as well as Thunder! or Spellswell and a bit better than Coach.

Both the DA and the standalone application need a lot of memory to work with (the standalone version needs 640K under MultiFinder). The whole package also takes quite a bit of disk space. Without a hard disk, you'll probably want to use the smaller alternate dictionary, and you should forget about the dictionary definitions in the Professional version.

Both the standalone and DA versions of Coach work with MultiFinder quite happily, and Coach is the only one of the three DAs that works properly from the DA Handler layer. I did manage to crash my system a couple of times while using MultiFinder and switching from Word to Coach, but after removing an INIT file called MFMenu (which provides a menu of MultiFinder applications), I was unable to reproduce the crashes.

In the word list tests, Coach missed only two of the fourth-grade words (*snowman* and *who'll*) and 160 words from the hard words list, second only to Spellswell. In the hard words list, Coach didn't recognize a long string of words beginning with un (as in *unromantic*), even though the root forms of the words (like *romantic*) were in the dictionary.

Faced with a word it doesn't recognize, Coach can make two kinds of guesses: Typo and Phonetic. Typo suggests words close to the spelling of the unrecognized word, and Phonetic searches for words based on the sound of the unrecognized word. For many common errors, Typo comes up with the right answer. Phonetic makes some plausible guesses, occasionally pulling a rabbit out of the hat, but it also offers some unusual suggestions. For *bizness*, it suggested *bawdiness, bylines, bayonets, bowlines,* and *viziers,* but not *business.* And — my personal favorite — for *tropies,* a misspelling of *trophies,* Coach suggested *tropics, troupers, trapeze, brothel, editors,* and *cryptic.* None of these is correct, but they make an excellent plot for a novel.

On the whole, Coach is not a bad guesser, but the Phonetic Guess feature often suggests a number of alternatives that are neither phonetic nor likely. Either the guessing procedure is buggy or it is simply reaching too far.

Coach can also check for problems with doubled words, capitalization, and placement of punctuation. That's not full-scale grammar checking, but it's very useful for cleaning up the me-

First-Class Coach

Spelling Coach Professional adds a unique feature to the Spelling Coach package: the ability not only to check a word's spelling but also to see its definition. A separate, large definitions file provides over 85,000 detailed definitions. This feature is not cheap (it adds $95.05 to the price of Spelling Coach) but is often extremely useful. It sure beats using a paper dictionary. The only drawback is that the typical dictionary has far more than 85,000 definitions.

The Professional version also includes a thesaurus, and the whole package is nicely integrated. You can select a word and jump to the dictionary window to see what other words are around it. You can select a word in the dictionary and jump to the thesaurus for synonyms. You can select one synonym and get further synonyms or jump to the definitions window for a definition. When you find a word that suits you, you can substitute it for the original word you selected with a double-click. With all these windows open, though, the screen does get a little cluttered, unless you have a large-screen monitor. If you can live with these limitations, Spelling Coach Professional is a worthwhile buy.

— Steven Bobker

chanics. You can also use this feature during interactive checking with the Coach DA.

In terms of speed, Coach is no speed demon, but it's fast enough. It gets you to the first unrecognized word quickly but doesn't move from word to word as quickly as Spellswell, for example. It also pauses for a long time during Phonetic guesses. Overall, these delays are not likely to irritate you unless you're in a deadline panic.

Coach looks jazzy, with multiple windows and icon buttons. The icons can be puzzling until you get used to them. Fortunately, Coach has keyboard commands for all its important functions. However, the keyboard command used to call Coach is Command-Shift-S, which conflicts with Word's Save command. You can change the key assignments of other Coach commands but not this one, unfortunately. Deneba's customer support representative said the problem would be fixed in the first update of Coach.

While the customer support for Coach is good (including a toll-free number), the documentation is another story. The manual contains a number of errors that could easily confuse a nervous user. For example, it refers to an "Added words window" but doesn't describe how to get to it, nor does searching for "Added words" in the index offer any help. As it turns out, the menu item is actually called "Show user words." Similar problems show up throughout the manual. The manual looks as though it were ripped out of the writer's hands and sent to the printer before the product was in its final form.

Spelling Coach is the most expensive checker of those reviewed here ($99.95, or $195 for the Professional version), but it also offers more extras than any of the others, including both DA and standalone versions as well as the legal and medical dictionary supplements.

CRACKING INTO GRAHAM

Graham Speller 1.1, from Graham Software, is a DA that does both interactive and batch checking. It has a dictionary of 75,000 words, a macro function, and a small thesaurus (25,000 synonyms, 4,500 root words). The main dictionary takes quite a bit of space (373K on disk), so a smaller 21,000-word dictionary is also provided for Mac 512KE users. Graham Speller claims to work with most word processors, and version 1.1 offers better compatibility with programs such as MORE, Excel, Multiplan, and MacDraw. It makes its corrections through your program's Find/Replace command, so it preserves style and formatting within the limits of the particular program.

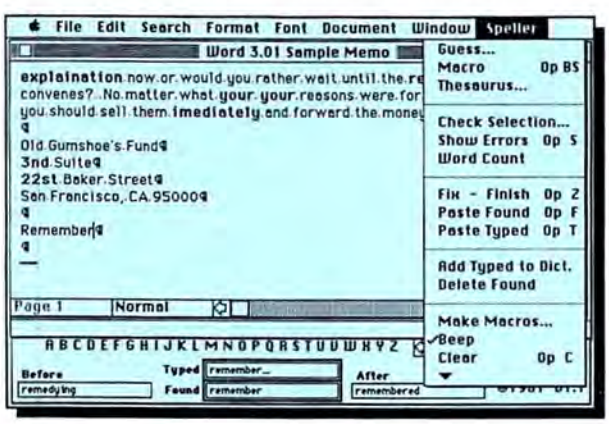
Graham Speller works with MultiFinder but not through the DA Handler that DAs are supposed to use. Instead, you install Graham Speller directly into an application using the Font/DA Mover or hold down the Option key when you select Graham Speller from the Apple menu. Both methods open Graham Speller in the space MultiFinder has allotted to that particular application, which means that you should increase the MultiFinder memory allotment for that application to make room for Graham Speller. Word, for example, is set to ask for 384K, but I couldn't get Graham Speller to open its large dictionary until I increased the partition to 786K. Once I increased the memory size, Graham Speller ran without any problems.

In the spelling tests, Graham Speller's performance was only so-so. It missed six of the fourth-grade words (five contractions and *snowman*). It also flagged 221 words on the hard words list, better than Thunder! but not as good as Coach or Spellswell.

When I tried to check the hard words spelling list, the program stopped after checking 677 of 1,058 words and finding 123 errors, giving the message "Too Many Errors, Memory Full." Graham Software customer support explained that the program allots only a certain amount of space to store errors, regardless of how much memory is available, and has to stop the spelling check when it runs out of room. It's not unusual to find many more than 123 errors in a long document, so this limit can be a real nuisance.

In interactive checking, Graham Speller guesses as well as Thunder! or Spellswell and a bit better than Coach. For *tropies,* which threw Coach into fits, Graham Speller suggested *tropes, tropics, and trophies,* proving that a correct guess isn't impossible. (Notice that the program suggested only three words, all very plausible.) To replace the misspelled word with one of the suggestions, you just click on the word you want.

Unfortunately, the Guess command works only during interactive checking. During a batch spelling check, all the program offers is the word's closest alphabetical neighbor, which is almost always wrong. Also, in interactive checking, Guess won't work if you've typed a space after the unrecognized word. And, in many cases, the program doesn't beep for the unrecognized word until after you've typed the space, so you have to backspace over the empty space before using the Guess command, a needless hassle.



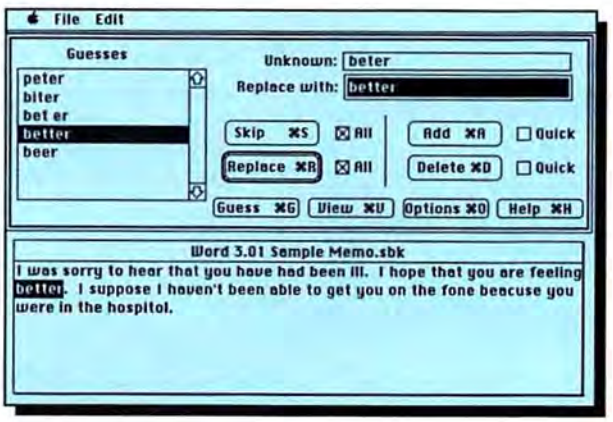
Graham Speller's menu, showing some commands available during interactive checking. You have to shorten the window for your word processing document if you want to see everything at once.

Graham Speller performed well on the two speed tests, but its times are somewhat misleading because the program doesn't check for capitalization or punctuation errors and doesn't suggest a correct spelling unless you ask it to. Also, it takes more work to make a correction with Graham Speller than with the other programs, which slows you down in real-world situations.

The program is also somewhat clumsy. In batch checking, you have to call your application's Find/Replace function, use Graham Speller's commands to paste the mistyped word into the Find box and the word Graham Speller found into the Change To box, execute the Find/Replace, and then tell Graham Speller to move on to the next error. Even in interactive checking, you have to select or delete the misspelled word yourself and then paste in Graham Speller's suggestion, unless you use the Guess command. Often, it's easier to type in the correction yourself. The program also has no keyboard equivalents for its Guess, Thesaurus, Check Selection, Word Count, and Add commands.

In addition, the process of making corrections is not adequately explained in the brief (16-page) manual. The Find/Replace method isn't mentioned in the brief tutorial at all — it's buried in the reference section. And though the manual does touch on all the program's functions, they aren't covered in enough detail for a beginner.

Graham Speller offers two extras. It has a small thesaurus, which functions well but has a total of only 25,000 synonyms for 4,500 unique words. And it has a macro function that lets you create your own shorthand. In the Make Macros window, you can enter a string of up to 255 characters (more if you create the file outside of Graham Speller) and assign it to an abbreviation or key word of your choice. To execute the macro, type the abbreviation and then press Option-Backspace — Graham Speller will insert the appropriate string in place of the abbreviation. This macro feature can be very useful, though it's a little more awkward than Thunder!'s similar feature.



Spellswell has a fairly simple screen that still gives you all the tools you need at hand. Here Spellswell is showing its guesses for the misspelled word *beter*.



Through Spellswell's Options dialog box, you can change what Spellswell will do for you. The options for checking homonyms and for treating hyphens as spaces are both unique to Spellswell.

ALL'S WELL THAT SPELLSWELL

Spellswell 2.0f is the most recent update of this standalone spelling checker from Working Software. Improvements over older versions include a Guess function, compatibility with Word 3.0X and Acta, a back-up file option, a revised interface, and MultiFinder compatibility. Spellswell now comes with a 93,000-word dictionary and has supplementary legal and medical dictionaries available at extra cost.

Spellswell works only as a batch spelling checker. It can check text files and MacWrite, Word 1.05 and 3.0X, Microsoft Write, Microsoft Works, MORE, ThinkTank, Jazz, Acta, and AppleLink documents. When making corrections in these documents, it preserves all style and formatting. It can't, however, check Word 3.0X files in the Fast Save format, as Coach can. A future update will support the Macintosh version of WordPerfect.

Considering its features and its 93,000-word dictionary, Spellswell is relatively compact. The program occupies just under 100K of disk space and needs 234K of memory under MultiFinder. The dictionary takes 275K on disk, and its table of homonyms takes another 11K.

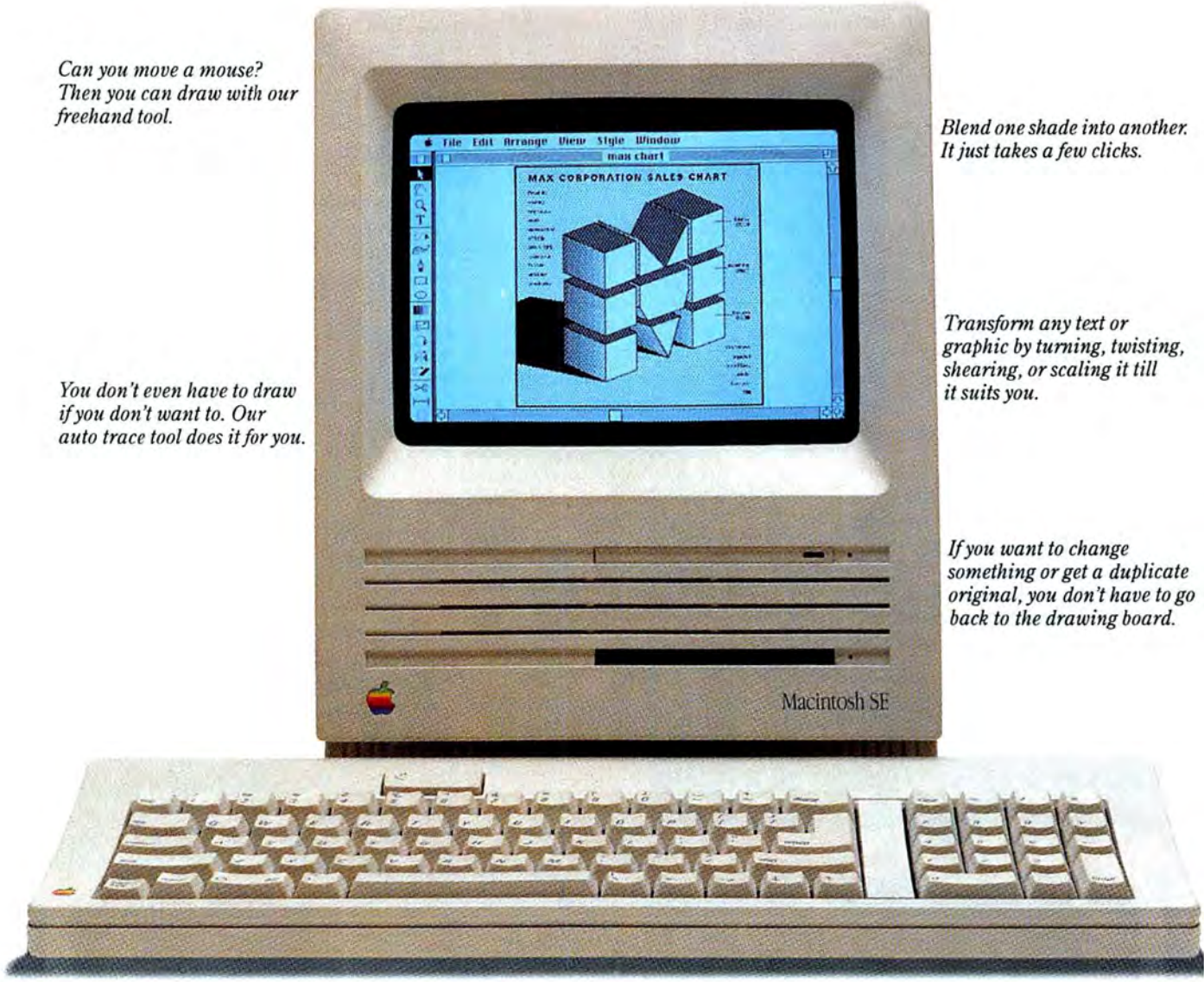
Spellswell runs without trouble under MultiFinder and requires considerably less memory than the standalone version of Coach (234K versus 640K). Having Spellswell available under MultiFinder still doesn't make it as interactive as a DA, but it does make it convenient.

Spellswell had the best score in both of the word recognition tests. It recognized all of the 1,744 fourth-grade words, the only program to do so, and flagged only 153 words from the hard words list. The difference in scores between Spellswell and Coach is probably not significant, but the difference

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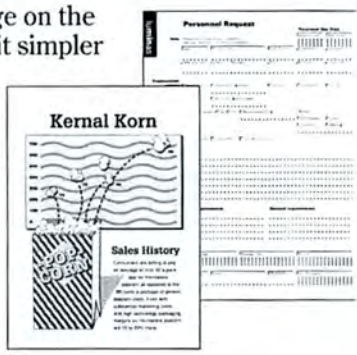
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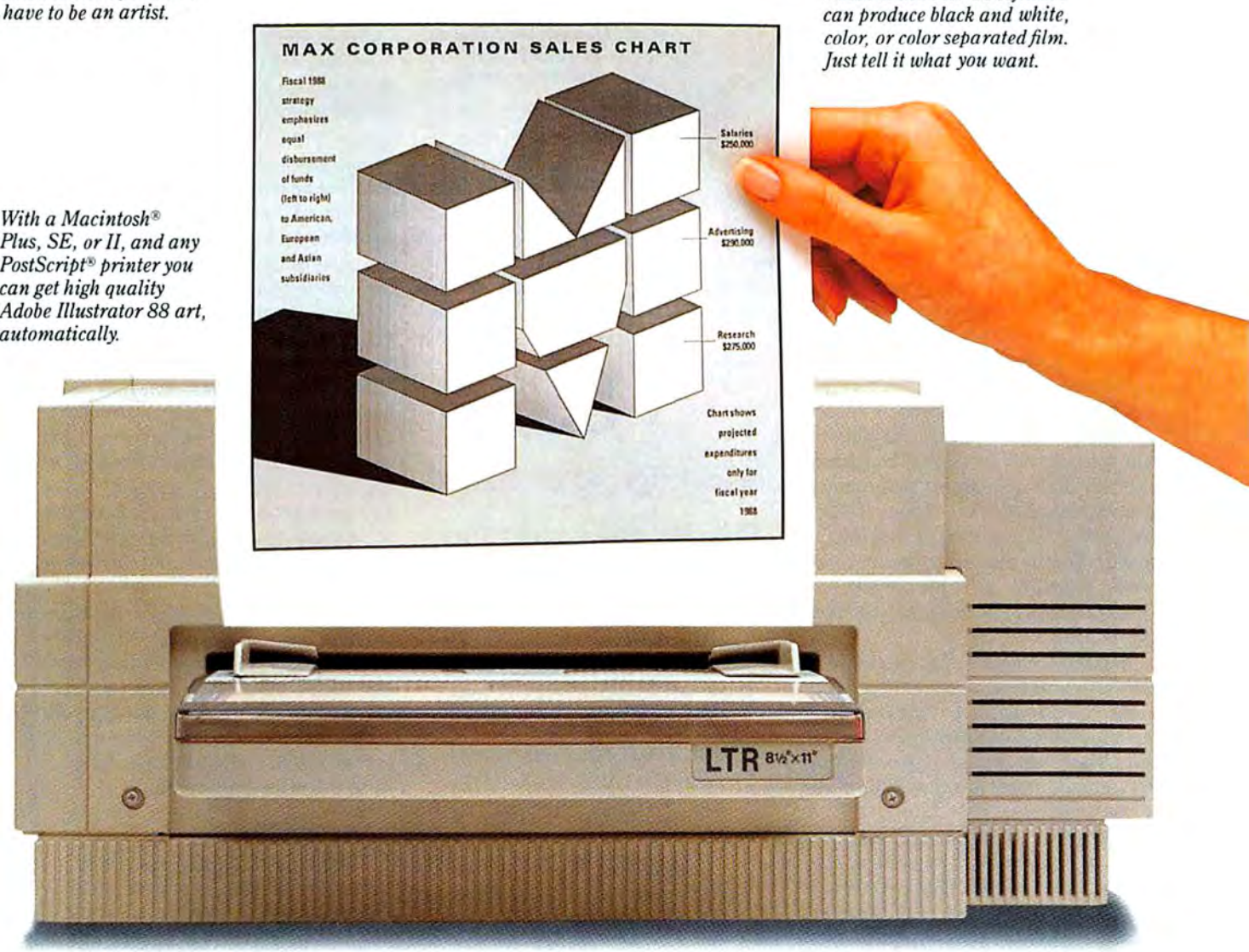
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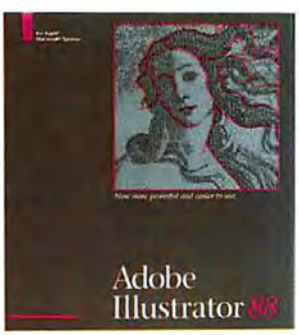


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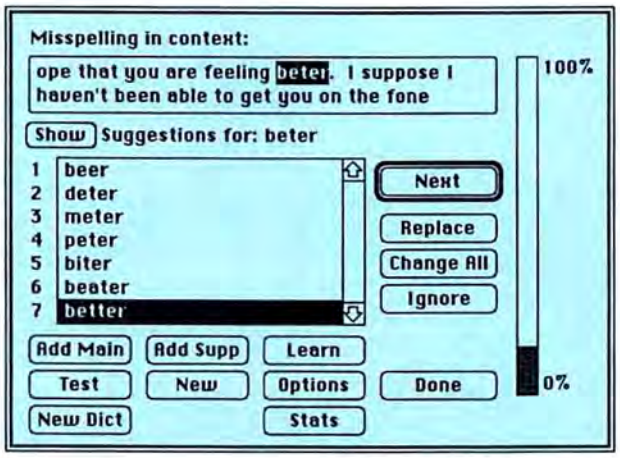
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Thunder! automatically shows not just one but several possible spellings for any unrecognized word, and it usually guesses pretty well within the limits of its dictionary. You can also choose to have Thunder! not guess at all until you ask, which speeds up processing.

between these two and Graham Speller or Thunder! certainly is.

Spellswell flags a lot of hyphenated words, like *business-related*, even though it has both *business* and *related* in its dictionary. To stop it from questioning such words, you can tell Spellswell to treat hyphens as spaces. However, this hyphen checking allowed Spellswell to catch the misspelling big-wig while the other three programs passed it, even though all had the correct form bigwig in their dictionaries. Spellswell also correctly treats words joined by a double dash (--) as separate words; the other programs do not.

When Spellswell finds a word it doesn't recognize, it shows the list of words closest to it in the dictionary, with the closest one highlighted. If you click the Guess button, Spellswell offers one or more suggestions for the correct spelling.

Spellswell is a fair-to-middling guesser. For *tropies,* it suggested *tropics* and *tropes,* failing to get *trophies* as Graham Speller did but avoiding Coach's flights of fantasy. For *fone,* it failed to suggest *phone,* and for *ought,* which should have been in its dictionary, it offered only the archaic Scottish *aught.*

Spellswell checks for more nonspelling errors than the other programs. It checks for improper capitalization, for two spaces after periods and other punctuation problems, for mixed numbers and letters, and for doubled words. It can also check for homonyms, though this slows things down quite a bit.

When Spellswell is set to check for two spaces after a period, it questions common abbreviations such as *Dr., Mr.,* and *Ms.* when used within a sentence. Also, because Spellswell is conscious of spaces, it sometimes suggests a spelling that includes a space at the end. But the space doesn't show when Spellswell displays the suggestion, so it's easy to miss the point.

> Spellswell takes longer to get started than the other programs, since it sorts and processes the file before it shows the first unrecognized word. Once started, Spellswell moves nimbly through the suspect words.

In the speed tests, Spellswell won the "realistic" test based on an actual document and lost the test based on a word list containing no errors. This is because Spellswell takes longer to get started than the other programs, since it sorts and processes the file before it shows the first unrecognized word. Once started, Spellswell moves nimbly through the suspect words, pausing occasionally to read and process the next section of the document. I use Spellswell only when I've finished writing, so I don't mind the opening delay much.

Spellswell's main screen is nicely laid out, with a group of buttons, a small scrolling window that shows suggested spellings or the dictionary list, and a larger window that shows the unrecognized word in context. Spellswell has keyboard alternates for all its commands, and you can scroll through the dictionary list by using the mouse or by simply typing the first letters of the word you're looking for. The screen is simple, but it has everything you need, and you can handle most jobs with one or two clicks.

Working Software provides good customer support for Spellswell over the phone (not toll-free, however), but the Spellswell manual is not as good as the phone support. It needs an index and more detailed explanations of how some features are used. But it tells you what you need to know and seems free of major errors.

Spellswell doesn't offer any extra features like a thesaurus, dictionary definitions, or a macro function, but it checks for more kinds of errors than the other programs. It's a good buy for such a thorough program, though the optional legal and medical dictionaries raise the price considerably.

THUNDER BOLTS

Thunder!, originally marketed by Batteries Included, is now handled by Electronic Arts. Electronic Arts says the new Thunder! 1.1 is three times faster than the previous version and improves compatibility with MORE 1.1, Microsoft Works, and the Mac II. Thunder! comes with only a 50,000-word dictionary but includes a Learned Words macro function.

Thunder! is a DA that can handle both interactive and batch spelling checks. It works with MacWrite, MORE, Acta, Excel, Microsoft Works, Microsoft Write, Word 1.05 and 3.0X, communications programs such as SmartCom II and Red Ryder,

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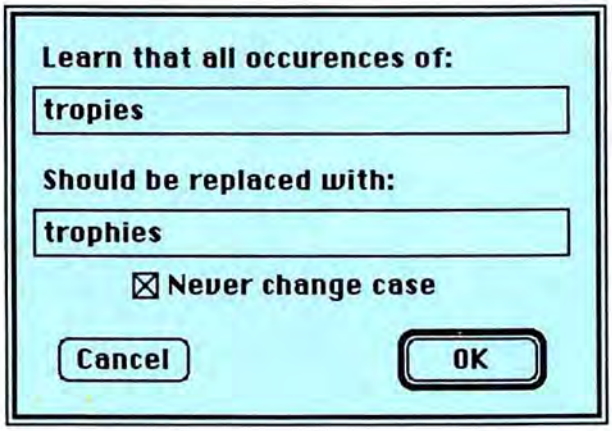
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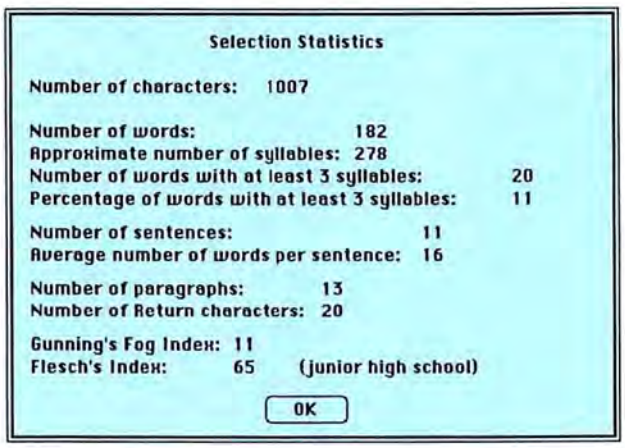
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Through Thunder!'s Learned Words feature, you can automatically substitute a word, phrase, or a paragraph or more of text for a key word or abbreviation. Here, Thunder! is being taught that whenever it sees the word *tropies* it should automatically substitute the word *trophies*.



When you use Thunder! to batch-check a section of text, you can also use the Stats command to see some statistics on what you've written. Some are useful, some only curiosities.

MacDraw, and text-only files. When checking interactively, Thunder! preserves style and formatting information. In batch mode, Thunder! preserves this information only with MacWrite and other programs that can put formatted information in the Clipboard (which Word, Works, and Write do not do).

Thunder! requires relatively little space. The 50,000-word dictionary takes only 88K on disk, and Thunder! itself requires only about 150K of memory in operation. Electronic Arts customer support says flatly that Thunder! 1.1 is not compatible with MultiFinder but that the next version (2.0) will be.

Thunder! knew all but two of the fourth-grade words (*doorbell* and *who'll*) but missed more than a third of the hard words. Thunder! simply has a smaller dictionary than the other programs. The words it does have are well-chosen, so Thunder! does better with ordinary documents, but you'll probably have to spend some extra time teaching Thunder! new words.

Within the limits of its smaller dictionary, Thunder! guesses fairly well when suggesting corrections. For *tropies* it suggested *tropics* and *trophies*, and for *fone* it suggested *foe, fore,* and *fond* but missed *phone*. It also missed some adverbial and adjectival forms of common words. For example, it suggested *cosmetic ally* as the replacement for *cosmetically*.

Unlike the other programs, Thunder! automatically offers the best suggestions it can think of or gives you no suggestions (if you turn the feature off), a system I like.

If you don't spell well, it makes sense to get all the program's best guesses right away. And if you're a good speller, you just need to have your typos flagged for you.

Thunder!, like Spellswell, was fastest in one speed test yet slowest in the other. On the test that included misspelled words, Thunder! was slower because it suggested several spellings for each unrecognized word, while the other programs suggested only one at a time. When set to make no suggestions, Thunder! was the fastest in this test as well.

When you make batch corrections with Thunder!, you do all your work from a single screen that contains a group of buttons, a window for suggested spellings, and a small window to show the unrecognized word in context. The screen is clean and easy to work with, and Thunder! has keyboard alternates for all its important commands. However, it would be nice if the keyboard commands were also shown on their respective buttons, as in Spellswell.

Electronic Arts has a special customer-support line for Thunder! and other Batteries Included software. Thunder! also has the most complete manual of all the programs reviewed here. It has a useful index, a glossary, a brief but useful tutorial, a discussion of how to use Thunder! with various programs, good explanations of the features, and a troubleshooting guide.

Thunder! doesn't include a thesaurus and doesn't do the kind of punctuation checking that Coach and Spellswell do, but it does have a few extras. By selecting Stats, you can get a quick analysis of what you've written, including word, sentence, and paragraph counts, average sentence length, and two "readability" scores (Flesch and Gunning Fog).

Thunder! also has an excellent Learned Words feature. You can teach Thunder! to recognize any character string or abbreviation and substitute any text you want for it, so *na* could store your name and address, for example. Thunder! will automatically substitute the assigned text whenever you type the abbreviation. You can even use this feature to correct common spelling errors automatically.

TOUGH CHOICES

If you're a lousy speller, look for a program with a big, well-chosen dictionary (Spellswell or Coach) or one that does a good job of guessing the

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Spelling Bee

OK, class, today we're going to have a pop spelling quiz. There are three questions. Speed, accuracy, inventiveness, and neatness count. Do all your work on a Mac SE with 2.5 megs of memory and a 20-megabyte hard disk, using Finder 6.0/System 4.2. No help (or hindrance) from MultiFinder allowed. Please note any extenuating circumstances.

1. VOCABULARY

Here are two lists of correctly spelled words. One consists of 1,744 words drawn from a vocabulary of fourth-grade-level words. The other has 1,058 "hard" words (taken from an antique CP/M spelling checker's dictionary). The hard words are less common but are not obscure or technical, and the list doesn't contain any proper names or acronyms. How many of these words do you know?

2. SPEED

Part I

Here are 1,735 correctly spelled words that all of you know. How quickly can you verify that they are spelled correctly?

Part II

Here is a sample document containing 2,630 words, including many that you won't know. They are all spelled correctly, however, so don't waste time suggesting corrections. Just flag the ones you don't know, and go on to the next word. How quickly can you process the file?

3. CREATIVITY

Here are some misspelled words. What do you think the writer intended to say? List as many suggestions as you like.

tropies
bizness
fone
ought

BONUS QUESTION

Define *versipellous*.

— *Jon Zilber*

Coach

1. I missed 2 (out of 1,744) on the fourth-grade list. I missed 160 (out of 1,058) on the hard list.
2. Part I: As a DA, I ran through 1,735 correct words in 47 seconds. As a standalone application, I took 1 minute and 34 seconds.

Part II: As a DA, I took 4 minutes and 25 seconds to process the error-filled file. I did a little better as an application, at 3 minutes and 15 seconds.

3. I used Phonetic guessing for the following: Replace tropies with tropics, troupers, trapeze, brothel, editors, or cryptic. Replace bizness with bawdiness, bylines, bayonets, bowlines, or viziers.

Super!! Check for the "ur" prefix. Stick with the DA! Forget the PHONETICS! Stick with the TYPO Mode

Graham Speller

1. I missed 6 (out of 1,744) on the fourth-grade list. I missed 221 (out of 1,058) on the hard list. But I had to take a break after finding 123 unrecognized words in the first 677 words. Too many errors at once clog my brain. Work on your contractions

2. Part I: I ran through 1,735 correct words in only 34 seconds.

Part II: The error-filled file took me only 2 minutes and 25 seconds to process.

3. Replace tropies with tropes, tropics, or trophies. But I can only do this in interactive mode.

Excellent Guesses!

Spellswell

1. I missed 0 (out of 1,744) on the fourth-grade list. I missed only 153 (out of 1,058) on the hard list.
2. Part I: I ran through 1,735 correct words in 3 minutes and 52 seconds.

Part II: The error-filled file took me only 2 minutes and 22 seconds to process.

3. Replace tropies with tropes or tropics. Replace ought with aught.

You ought to have "ought" in your dictionary instead of obscure Scottish dialects. Stick to the basics.

Thunder!

1. I missed 2 (out of 1,744) on the fourth-grade list.

I missed 375 (out of 1,058) on the hard list. Watch Suffixes + Prefixes

2. Part I: I ran through 1,735 correct words in only 28 seconds. Speed demon!

Part II: The error-filled file took me only 1 minute and 37 seconds to process when configured to withhold suggestions, but it dragged on for 5 minutes and 15 seconds with suggestions (because I showed all my suggestions at once).

3. Replace *tropies* with *tropics* or *trophies*. Replace *fone* with *foe*, *fore*, or *fond*.

A little slang won't hurt you!

W. F. Buckley

1. I found these words superfluous and elected to sequester them from my psyche.
2. Part I: I can verify the accuracy of all of them instantly, as your instructions, dear teacher, informed us of their verisimilitudinous spelling.

Part II: The malfeasant file was sopporific and monotonous, not worthy of rectification.

3. I humbly forbear formulating conjectures to forfend the unfortuitous force majeure of offending the monographist.

Bonus Question: *Versipellous*, of course, means "having the faculty of changing the skin."

You're right — but stop wasting my time with obsolete archaic words. Quit showing off!

correct word (Graham Speller in interactive mode). If you're a good speller but a lousy typist (i.e., you make mistakes but know how to spell the word once you spot it), look for speed (Thunder!, with suggestions disabled). You can type in the correct word in less time than it takes a program to guess and then insert it.

If you want only a batch spelling checker, Spellswell gives you the best deal. It checks for more kinds of errors than any other checker and is still reasonably fast in real-world spelling checks. Its guessing is weak, but it has a good dictionary and is easy to use.

WRAP IT UP, I'LL TAKE IT

If you have a Buckleyesque vocabulary (or want to develop one), go for the works — Coach Professional. You'll appreciate the integrated thesaurus and definitions. (If you *are* Buckley, you don't need *any* of these, endorsements notwithstanding.) But if you have a Ramboesque vocabulary, stick with Thunder!'s basic dictionary — a bigger dictionary could unwittingly condone typos that turn out to be words.

Whichever checker you choose, don't chuck your trusty *Webster*'s just yet. Spelling checkers are a real boon, but — in the great Spelling Bee of Life — even the best of them can't guarantee you a trophy.

TED SILVEIRA IS A FREELANCE TECHNICAL WRITER FROM SANTA CRUZ, CA. HE USED TO BE A GOOD SPELLER BUT NOW PREFERS TO HAVE THE MACHINES DO THE WORK.

MACUSER RATING

Graham Speller 1.1 ★★★

Follows Mac Interface	■ ■ ■ □ □
Printed Documentation	■ ■ ■ □ □
On-Screen Help	None
Performance	■ ■ ■ ◧ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ □ □

Comments: DA spelling checker. Includes macro feature. **Best Feature:** Good guesser in interactive mode. **Worst Features:** Clumsy interface, no Guess feature in batch mode. **List Price:** $44.95. Graham Software, 8609 Ingalls Circle, Arvada, CO 80003; (303) 422-0757. Not copy protected.

MACUSER RATING

Spelling Coach Professional 3.0 ★★★★½

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ □ □
On-Screen Help	None
Performance	■ ■ ■ ■ ◧
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ ■ ◧

Comments: DA and standalone spelling checkers. Professional version includes thesaurus and dictionary definitions, the only spelling checker to do so. **Best Feature:** Integration of thesaurus and dictionary definitions with spelling checker. **Worst Feature:** Off-the-wall Phonetic guesses. **List Price:** Spelling Coach, $99.95; Professional, $195. Deneba Software, 7855 N.W. 12th Street, Suite 202, Miami, FL 33126; (800) 6-CANVAS. Not copy protected.

MACUSER RATING

Spellswell 2.0f ★★★★½

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ ■ □
On-Screen Help	■ ■ ■ □ □
Performance	■ ■ ■ ■ ◧
Support	■ ■ ■ ■ ■
Consumer Value	■ ■ ■ ■ ■

Comments: Standalone batch spelling checker. Also checks for punctuation and other errors. **Best Features:** Good dictionary, thorough checking, simple interface. **Worst Feature:** Weak guessing. **List Price:** $74.95. Working Software, 321 Alvarado St., Suite H, Monterey, CA 93940. (408) 375-2828. Not copy protected.

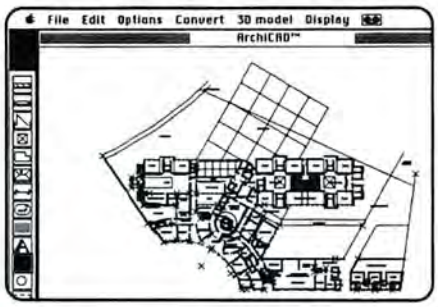
MACUSER RATING

Thunder! 1.1 ★★★★

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ ■ ■
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ■ ◧
Consumer Value	■ ■ ■ ■ ◧

Comments: DA spelling checker. Includes macro feature. **Best Features:** Fairly fast, good guessing of misspelled words. **Worst Features:** Small dictionary, lack of MultiFinder compatibility. **List Price:** $49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404; (415) 578-0316. Not copy protected.

ARCHITECTURE



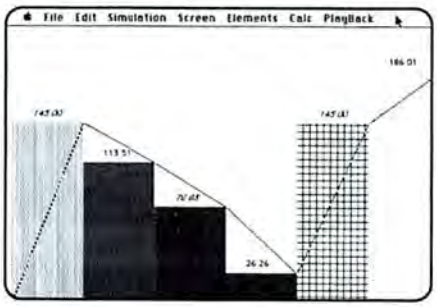
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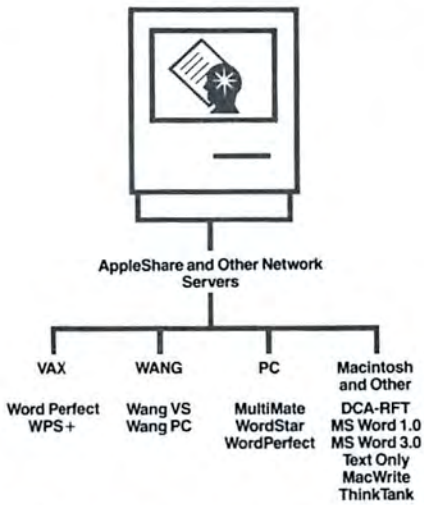
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Mind Over





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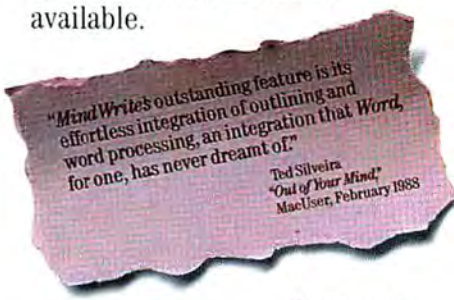
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Matter.

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Jim Wolcott
"*The MindWrite Word Processor, Flexible Outlining for Organizing Your Ideas*,"
MicroTimes, May 1988

help you share documents across a network, MindWrite supports AppleShare.®

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Fred P.

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Bernard Glassman
Vice President, Marketing
HealthEast, Allentown, PA

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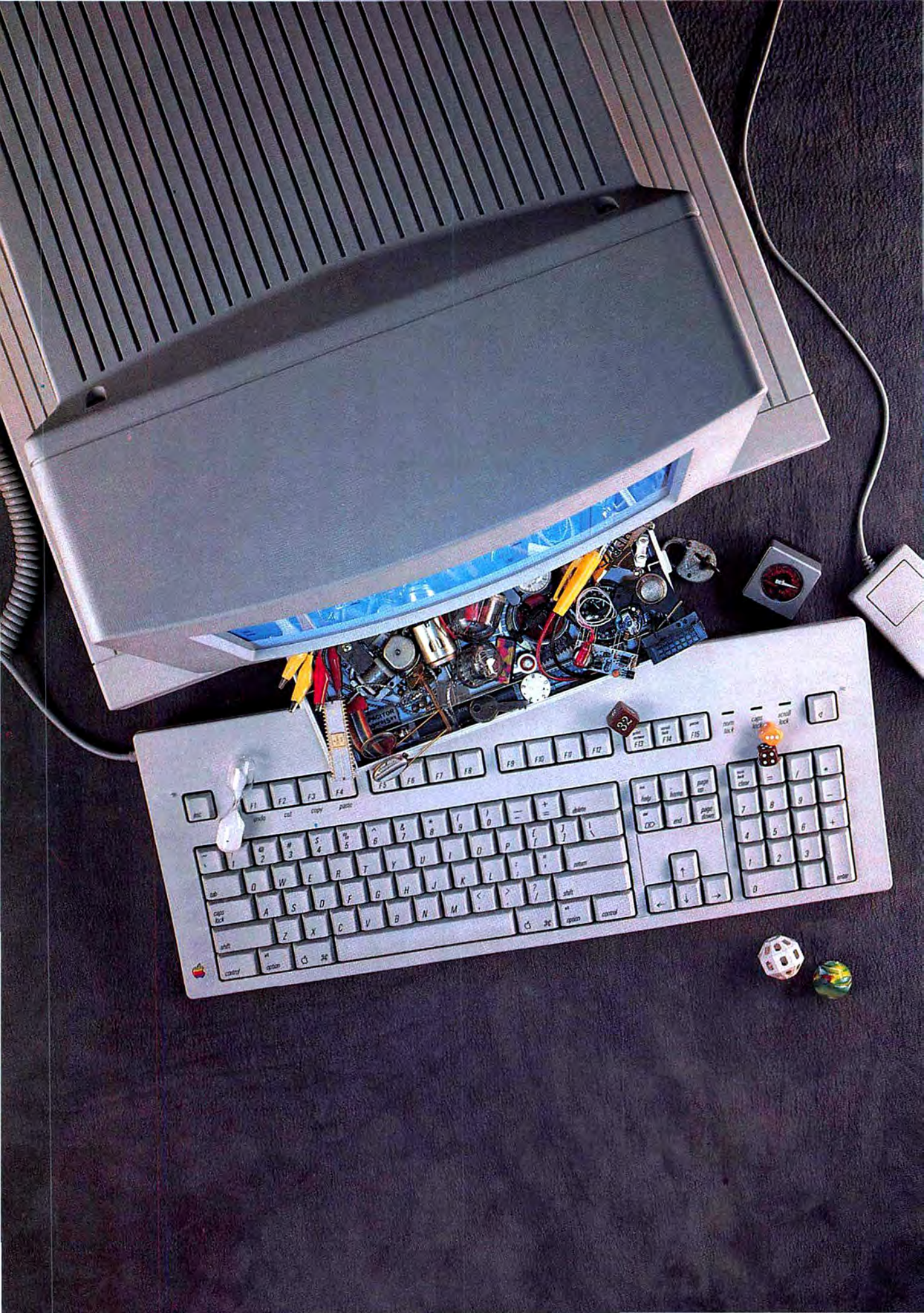
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  - Scroll using standard scroll bar or arrow keys.
  - Use standard zoom plus unique tiling to give windows convenient sizes and locations.
  - Access any window instantly from the Windows menu.
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  - Compare documents side-by-side on

Technology

Visit us at MacWorld Boston, Booth#804, Bayside Expo Center August 11–13, 1988.



The SUM of the Parts

SUM or, to be precise, Symantec Utilities for Macintosh, is the slickest and most important set of utilities you can get for your Mac. To have a hard disk and not have SUM is sheer folly.

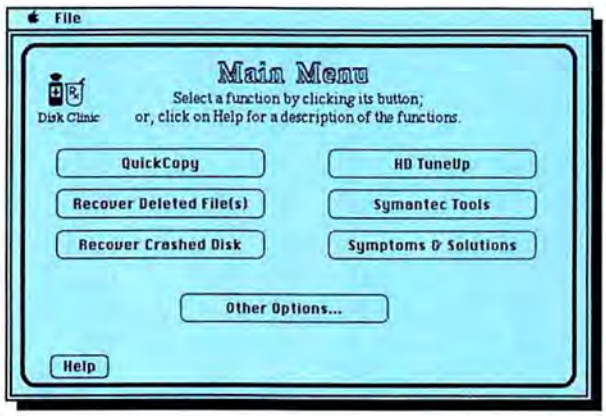
Computers are like boats. Except they're not floating holes on the water that you pour money into; they're sitting holes on your desktop that you pour money into. You'd think that once you had bought a computer, a few extra disks, and some basic software you'd pretty much be set. Not true. Your computer always wants or needs something new — speedier hardware, more hard disk storage, better software. One category that you may have overlooked when buying your Mac is utility software. Utility programs help you use your computer. Though they share a goal of making more efficient use of your computer, they're different in conception from productivity software.

Utilities come in many varieties and flavors. Many utilities have become quite well known: Suitcase, QuicKeys, Font/DA Mover, Copy II Mac, and Mac Zap come readily to mind. Now there's a new product, Symantec Utilities for Macintosh (or SUM), that is about to take over as the king of the utilities heap. Why? Because its components and features far exceed anything else released (for the Mac) to date. PC users have long had a group of utilities that would automatically recover deleted or lost files (a not too rare MS-DOS occurrence). These sets of programs are highly regarded and very effective. Almost every PC owner has one or more of them. They get used, and they work.

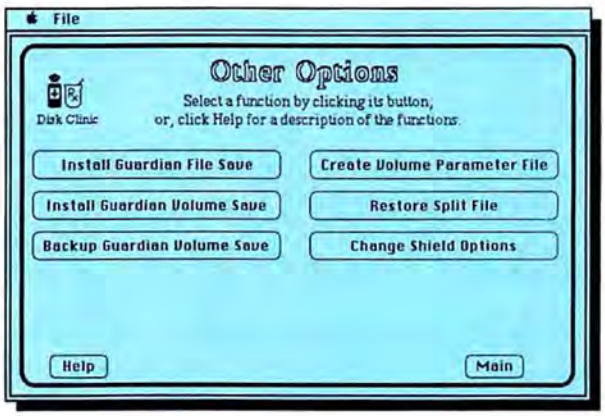
BY STEVEN BOBKER

Mac owners haven't been so fortunate. There are programs such as 1st-Aid Kit, Mac Zap, and Mac Tools (part of the Copy II Mac package) that recover some deleted and damaged files.

Unfortunately the procedures are neither particularly quick, pleasant, nor easy for a novice. These programs have found a wide audience, but it's been in spite of their flaws. Now Symantec Utilities for Macintosh, which is based on the skeleton of the acclaimed Mac Zap, brings real power to the realm of Mac utilities.



Always start with Disk Clinic — the main screen is shown here. Tell the program what the problem is or what you want to do. If you don't see what you're looking for, select the Other Options.



Here's where you install or back up Guardian's special files. The first time you run this screen, it's a good idea to select Change Shield Options.

THE PIECES

SUM is not a single program, although in normal use it usually appears as a single application. Actually SUM is made up of nine applications and two special programs called INITs. The applications are real; that is, you could run them by double-clicking on their icon. However the manual suggests, correctly, that you need double-click only the application called Disk Clinic. Disk Clinic leads you through a nicely designed, if somewhat graphically inelegant, set of screens that ask you about your ailing disks or files. It automatically branches to other questions based on your answers and will ultimately recommend the SUM tool or tools best suited to solving your problem. And, once you grant it permission, it will launch that tool for you.

The rest of the SUM pieces can be divided into three categories: recovery programs, disk and file health programs, and very useful general-purpose tools. The major recovery tools are Guardian, HFS Recover, Scanner, and Floppy Recover. Guardian is breakthrough software and the most important of SUM's parts. It sits on your disks (both hard disks and floppies) and protects them.

Well, what does that mean? It means that if you crash or accidentally erase a Guardian-protected hard disk, you can recover everything quickly — usually within minutes. It's not infallible, but should save better than 99 percent of all crashed hard disks — if installed and used as directed. It's not going to save you if the heads crash into the media (as happened on my Apple HD40SC recently). Also, some crashes may corrupt or damage files so that even though they are recoverable, they're not usable.

> Guardian works by keeping logical maps of what is stored where on your disks.

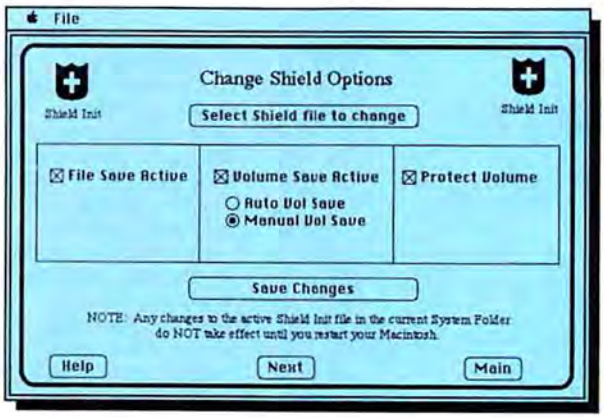
The Symantec folks like to demonstrate this feature by attaching their hard disk to your Mac, showing you SUM, and then casually erasing their hard disk.

They then quickly recover it, usually in less than 2 minutes. The first time I saw this I thought, "Well, that's nice. Looks like a rigged demo." So as soon as I got my own copy of SUM, I backed up my hard disk (it was overdue anyway), wiped it, and restored it. Yes, it works. Then, using the disk editor in Symantec Tools (discussed in detail later) I really messed up the hard disk. And recovered. After four tries, I'm convinced that this is one awesome program, and I don't ever plan to be without its protection — until something even better comes along.

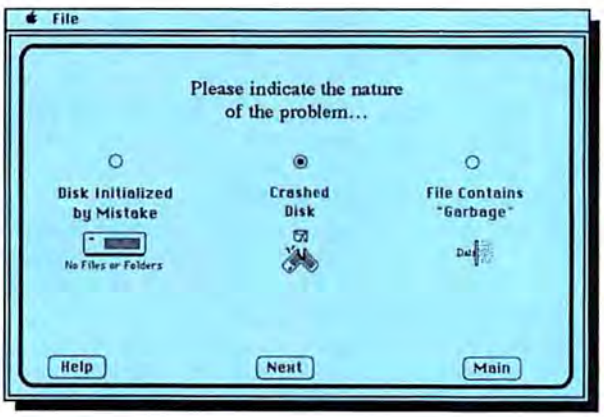
ON GUARD

Guardian works by keeping logical maps of what is stored where on your disks. Normally it stores the maps on the disks themselves, but recovery can be hastened by periodically backing up the Volume Save file to a floppy. Guardian also optionally keeps track of erased files. And, on command it can restore the last 100 or so files as long as they haven't been written over.

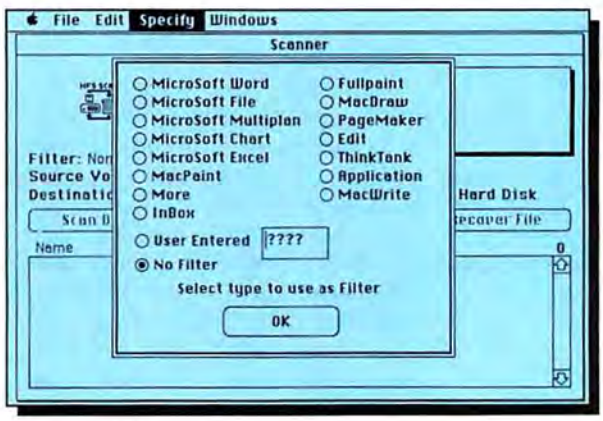
The price of this protection is moderately high. Guardian relies on invisible files that it puts and maintains on your disks. The Volume Save file, the



This is the default screen. The choices here are the best ones, with a single exception. That's the radio button marked Manual Vol Save. If you leave that as is, you have to press the Option key when restarting or shutting down in order to update Guardian's special Volume and File Save files. I suggest you change to Auto Vol save. The extra time spent updating the files repays itself in peace of mind.



This screen is typical of the questions that Disk Clinic asks you when trying to determine what it should recommend.



All the recovery programs provide a large variety of filters. Selecting one or more of these will speed up the scanning process immensely.

one that brings everything back, is big. It usually takes up about 7 percent of your hard disk. That means that the Volume Save file occupies about 250K for every 20 megabytes of material on your hard disk. You need to leave space for the file. The Unerase file is limited to a maximum of 15K. That's where the 100-file limit comes from. If you tend toward long filenames, you won't be able to unerase as many files.

Crucial to the operation of Guardian is the companion Shield INIT. (An INIT is a specialized small program that automatically loads every time the Mac starts up.) Shield controls when the Volume Save file is updated. Updating can take as much as 1 or 2 seconds per megabyte — it depends on exactly which Mac and disk you have. Thus, if you have a couple hundred megabytes of storage on-line, updating the Volume Save file takes a few minutes. The time is directly related to the amount of material stored, not to the capacity of your disks.

Most folks have between 20 and 80 megabytes stored on-line. That translates to a Volume Save updating time of a minute or less. Taking that extra minute to update this file frequently saves you a lot of grief in the event of a crash. Check how long it takes your system to update the Volume Save file. While the update is actually occurring, the cursor shape changes to a small shield, so it's easy to time it. I think that you'll get used to it quickly. In fact, it bothers me now when a Mac that isn't protected by Guardian shuts down abruptly.

Shield comes configured so that updating the Volume Save file requires positive action on your part. To trigger the update, you have to hold the Option key down as you Restart or Shut Down. You have the option of making updates automatic upon Restart or Shut Down. I strongly suggest that your first action after installing Shield be to change the update status from manual to automatic. The other defaults are sensible and fine.

CRASH, BANG, RECOVER

Sometimes Guardian won't be able to recover your files. The damage may be too severe for it, or the Volume Save file itself may be damaged. The disk damage can be either physical (in which case you're seriously out of luck) or logical. SUM fixes most logical damage. To fix logical damage, you can use SUM's triumvirate of heavy-duty recovery tools: HFS Recover, Scanner, and Floppy Recover.

HFS Recover recovers files from any HFS disk (hard or floppy), partition, or LAN volume. It can't help with deleted files. This program is relatively flexible and efficient, and it usually recovers more files than its companions. Start HFS Recover by scanning the damaged disk for files. This operation can be slow, taking as long as 15 minutes per 20 megabytes. However, it can't be avoided, so while HFS Recover is scanning, do something else, like read the manual or the latest copy of *MacUser*.

Sometimes a scan will be interrupted by messages, most often to inform you that the program has reached the maximum number of files it can han-

dle at a time — a value that depends on how much memory is available and how long the filenames are. You can recover in multiple passes — up to three — with HFS Recover starting each new pass where it left off on the previous one.

You can speed scans up by having the program search for specific file types; that's called filtering. Do this only if you need to recover only certain files.

You'll need plenty of floppies on hand or an empty hard disk, because you can't recover to the same disk that you are recovering from. Pay attention to which volume is set as the destination and change it if necessary. Normally, the preset volume, which was picked within Disk Clinic, is fine.

HFS Recover has an Advanced mode for experienced users. Stay away from it unless you're sure you know what you're doing. Some of the menu items have no safeguards, and mucking around can render the disk you're trying to recover permanently unrecoverable.

Scanner basically does what HFS Recover does, but it uses different techniques. In addition, it recovers deleted files. Scanner works by reading every track and sector on the disk and, if at all possible, locates all the files on the disk. It gives you a list of what it has found, and you then tell it what to recover.

Scanner has two modes: regular and signature. The regular mode locates files by looking for special "beginning of file" markers, while the signature mode looks for the special signature codes that each file contains. Depending on the damage, one mode might be more efficient than the other. There's no way to tell in advance which mode will work best, so you should plan on using both, one after the other.

Signature mode has one major quirk, imposed by how it works and the nature of the System software. It can't recover filenames. Instead, it names the files it recovers with the creator application's name and a number. For example, if two WriteNow files were recovered, they would be named *WriteNow1* and *WriteNow2*.

Operating Scanner is very similar to using HFS Recover. Speed is, if anything, even slower, file number limitations are the same, and filters are available to speed things up. Remember, to get the most out of Scanner, you have to run it twice — once in each mode.

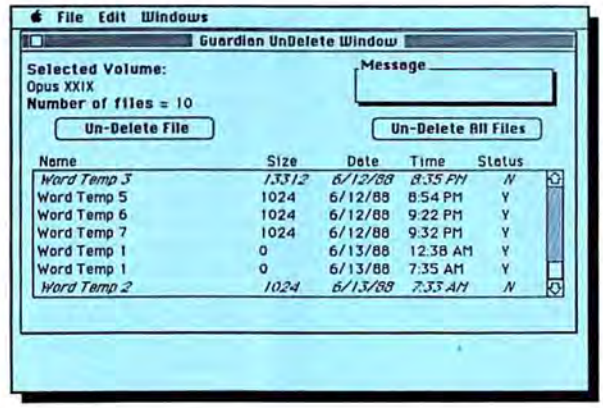
Floppy Recover is, as its name implies, designed to recover damaged and deleted files from floppy disks only. In many ways it is the floppy-disk version of Scanner.

Floppy Recover is somewhat simpler than its more versatile cousins. You can't have more files on a floppy than it can handle, and there's no need for filtering ability. Still, in the interests of efficiency, use HFS Recover first and then, if there are still unrecovered files, use Floppy Recover.

UNPIECING A DISK

After disks have been used for a while, some of the files on them tend to get broken into chunks and stored here and there, wherever there's room. The Mac would prefer, as all computers would, to keep its files neat and together, but the demands of efficient disk usage often result in what's known as fragmented files. Fragmentation, if severe, slows performance, since files can no longer be read in quick, smooth accesses. Instead, the drive heads must constantly move to seek and pick up the bits of files.

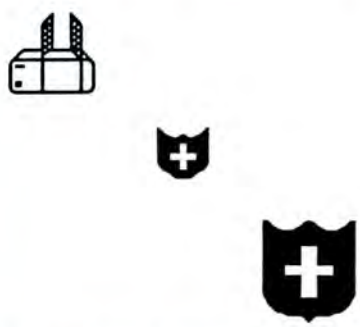
When you save a file to disk for the first time, the operating system assigns the file the amount of space it needs at that moment plus a bit more. Then, when the next new file is saved, it follows along in the next bit of open space. Some big files, like the System, your font and DA files, and large data files, easily grow beyond their allocated extra space. The new parts then have to be placed in the next open space, and the locations of all the bits



Guardian works to undelete the most recently erased files. As you can see, Word creates lots of temp files and then (usually) erases them when you quit the program. The filenames in italic indicate files whose space has already been used for other files. These files can't be recovered. The status column also indicates whether a file can be recovered.



All parts of the program offer three quitting options: You can Quit back to the Finder or Finder-alternative, you can transfer to any other application directly, or you can return to Disk Clinic's Main Menu.



The two larger icons are briefly displayed when you start your Mac. They indicate that the Shield and HD Partition INITs have been loaded. The small icon isn't really an icon; it's a cursor. It's displayed whenever the Volume and File Save files are being updated.

have to be remembered so that they can be found later. If you have several hundred files, the map that shows where all the pieces are can be both big and complicated.

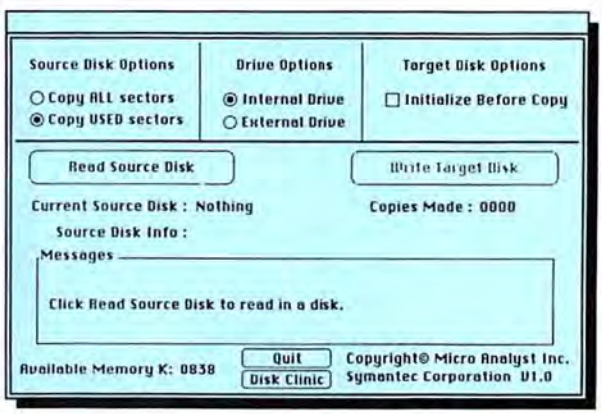
That's the problem. The solution is to defragment your disk. This is done by special software that analyzes the problem and then moves files around so that it maximizes the number of unfragmented or whole files on the disk.

Several defragmenting methods exist, and they vary in efficiency. AlSoft's Disk Express (version 1.10 — don't use earlier versions) is the most thorough. It's also by far the slowest. Reorganization of a very fragmented 40-megabyte hard disk takes a couple of hours. At the other end of the Spectrum is PowerSoft's Power Op. This program is much quicker, but it doesn't do as thorough a job. In particular, it often fails to reorganize the biggest files on your disk — those that would be most helped by being made whole again.

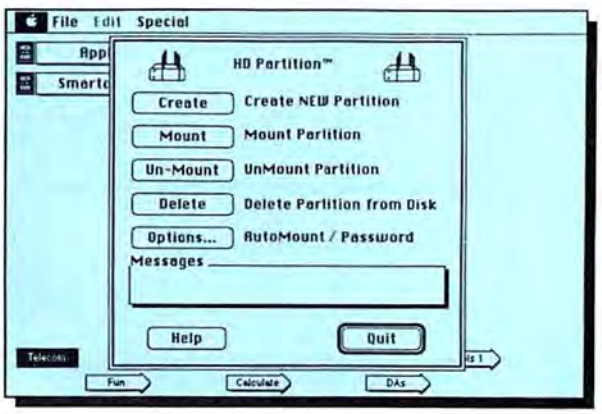
SUM's defragmentation utility, HD TuneUp, is closer to Power Op than to Disk Express. It works well enough, but I'd often like it to go farther. It's those big, frequently used files that I really want defragmented. Reorganizing them yields the greatest performance improvement.

The program does have a nice (and speedy) Analyze function that rapidly scans your hard disks and reports the percentage of fragmentation. You needn't reorganize until you can actually see performance degradation. That normally starts at about 15 percent fragmentation. The manual suggests running this program with fragmentation as low as 2 percent. Unless your disk is more than half empty (in which case you shouldn't have too much fragmentation anyway), HD TuneUp isn't going to defragment your biggest files.

Don't run this program, or any similar program, too frequently. Since they engage in wholesale file moving, power outages or bombs usually result in unrecoverable crashes. Even Guardian may not help. That means that a mandatory step when using HD TuneUp is the preliminary backup. Always, always back up before running HD TuneUp. I've warned you, the manual warns you, and the on-screen directions warn you. So please back up.



This is QuickCopy's straightforward control panel. Copy Used Sectors is the default selection because that's the fastest way to copy disks.



HD Partition is a desk accessory. This dialog is where you create, mount, unmount, delete, and password-protect your partitions.

TOOLS FOR DISKS

SUM provides three programs that aren't intended specifically to fix problems. QuickCopy, HD Partition, and Symantec Tools serve primarily to add useful functionality not provided by Mac System software.

QuickCopy is a basic floppy-copy program. It can transfer neither programs nor data to or from hard disks. Its two main virtues are that it's part of a package (and thus relatively cheap — compared with a standalone package — and easily accessible) and that it's very fast. It's flawless in operation, doing exactly what you'd expect and, equally important, nothing that you wouldn't expect.

While copying takes time for all programs (or at least those that properly check and verify their results), QuickCopy gains speed by offering a Copy Used Sectors option. Only those disk sectors that actually contain data are read and then written to the target disk.

This feature can be used to initialize large numbers of blank disks quickly. Simply create an empty but formatted disk called Blank or MT and then use QuickCopy to copy that disk. The program will initialize the disks, but then copy nothing (which is a quick procedure!) since the source disk is empty.

QuickCopy wants to copy disks without swapping and will try its best to do so. If you elect to Copy All Sectors, you'll need 838K of RAM to copy double-sided 800K disks and 420K to copy single-sided disks. If you're copying only Used Sectors, you'll usually need far less memory.

HD Partition lets you set up separate, mountable volumes on your disks. These volumes can be as small as you want or as large as you want, up to the amount of space available. And volumes can be passworded, in which case their contents are encrypted. The double protection of the password and the encryption makes volumes protected in that manner very secure.

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This is Symantec Tool's main editing window. The contents of a disk sector are shown in hexadecimal on the left and ASCII on the right. This particular sector is the first sector of Word, a program that has 699 sectors in its resource fork. Note the arrow pointing to the applications type and creator, which is its signature.

This feature is very useful. Not only can you guard sensitive material stored on your hard disk but you can also set up protected areas on floppies that you send to other people. They'll be the only ones who can access the material, and to do so they'll need to know the password and have a copy of SUM.

This is neither great nor bad software. It's easy to use, and its ability to mount automatically up to four non-password-protected partitions is very useful. HD Partition nicely rounds out the SUM package.

The last of the tools is the oldest and most complicated part of the package. It's called Symantec Tools, and it comprises a disk and file editor. It can access and change any byte on any disk. It even works on off-line (or unmounted) volumes.

That may be useful for people who know and understand exactly what goes on disks, but it's an open invitation to mayhem for the rest of us. The program and the manual warn you not to do anything that you are not absolutely sure about. And this is good advice.

Mac Zap originally started as a disk editor (see "The Ugly Duckling"). Symantec Tools is that editor, much updated, much improved, and much simplified.

It has lots of windows, each totally packed with information. You can get detailed information on each of your disks and files or view a map of your disk showing the actual locations of files. The map view even has a zoom area so you can check its details.

Symantec Tools also lets you edit your disks and files. You can do real damage this way. If you're tempted to explore Symantec Tool's editing, first set the software Write Lock to protect yourself from yourself.

One feature that is safer to use than the others is Edit File Attributes. Here you can set type names and creators and turn the various attribute bits on or off.

Since some copy programs (but not QuickCopy) fail to deal with these important matters properly, there may be times when you'll have to go in and fix things.

Don't be afraid of this powerhouse, but always be wary of it.

PAPER TAPE

Utilities, by their very nature, are less intuitive than properly designed applications. While that's the case with SUM, its intelligent design and excellent on-screen help somewhat obviate the need for a great manual. Old Mac Zap users are sure to breathe a sigh of relief if they remember the old manual. It had tons of information but was one of the most frustrating, hard-to-access manuals ever produced.

The new manual is totally the opposite. It's well laid out, clear, detailed where it needs to be, and simple where that approach is appropriate. Not only is it readable but it's also worth reading.

Of particular interest is Appendix A, "Quick Repair." This chapter was written for new buyers who acquire SUM primarily because they already have a crashed or damaged disk. These four pages will either recover your disk (or as much of it as possible) or let you know that you really lost it.

It's good, sensible stuff. It's also a chapter that did not have to be provided, and it's to Symantec's credit that it's here at all.

SUM is too new to be able to report conclusively on Symantec's support, but they've always provided excellent product support. And the program's author, Les Herbst of Micro Analyst has been renowned for his support of Mac Zap. I expect product support to be excellent.

SUM requires at least System 4.1 and Finder 5.3. It runs under all later System software. Testing for this re-

The Ugly Duckling

This SUM did not magically appear one day, the prettiest swan on the utilities lake. It metamorphosed from Mac Zap, one of the first disk editors and copy-protection patchers available.

No matter what you thought of Mac Zap's abilities, you had to agree that it was one of the ugliest, hardest-to-use Mac programs you ever saw. Sure, it had power, but there was nothing about it that made you want to use it. If you did, it was because it was the only possible tool for the job. You can still see some hints of the old Mac Zap interface in Symantec Tools, but the look has been cleaned up.

Mac Zap was powerful enough and popular enough for its author, Les Herbst, to update it constantly. Eventually the package consisted of Disk Doctor, the forerunner of Disk Clinic; Mac Zap Tools, which became — in its simplified form — Symantec Tools; Fast Disk Copy, which, after real improvements, become QuickCopy; Mac Zap Patcher, a copy-protection-defeating program that's no longer needed; Mac Zap Copy, which copied protected software and is also no longer needed; and Mac Zap Recover, the forerunner of all the SUM recovery tools.

The Mac Zap manual has a special place in many users' hearts. It started out truly awful, hopelessly too technical, and intimidating in the extreme. And it stayed that way. Even as later versions of Mac Zap got easier and easier to use, the manual remained impenetrable. It's a classic. If you had a month or so to devote to full-time study, you could get a lot from it, but it wasn't anyone's choice for casual reading.

view used System Tools 5.0 (System 4.2/Finder 6.0) and System Tools 6.0 (System 6.0/Finder 6.1). Both worked perfectly. The computers used were a 1-megabyte SE and a 4-megabyte SE equipped with a Radius Accelerator 25 card (with a 25-Mhz 68020 CPU and a 25-MHz 68881 coprocessor). All the software worked on both machines. Brief compatibility tests on a 512KE and a Mac Plus uncovered no problems.

The manual suggests that you turn off MultiFinder when using everything except Guardian. That's to allow the recovery and copy programs access to the maximum amount of memory. They're far more efficient with more memory. However, all parts of SUM do operate correctly under MultiFinder.

SUM comes on two 800K floppy disks. You can exchange them for 400K disks at no cost, but you must return the originals.

SUMMING IT ALL UP

While most of the tools are geared toward hard disk users, there's so much here, and it's so good, that everyone will benefit from SUM. If the thought of dealing with utility programs bothers you, think of SUM as health insurance for your disks and data. And have a friend install it. SUM is both a bargain and a necessity. It's the first program where I've really wanted to go beyond the confines of our rating system and give it more than five mice.

Get SUM.

STEVEN BOBKER IS THE CHIEF SCIENTIST AT MACUSER. HE GETS TO PLAY WITH ALL THE NEAT STUFF AND SAYS THIS PROGRAM IS ONE OF THE NEATEST.

MACUSER RATING

Symantec Utilities for Macintosh (SUM) ★★★★★

Follows Mac Interface	■■■■□
Printed Documentation	■■■■◧
On-Screen Help	■■■■■
Performance	■■■■■
Support	N/A*
Consumer Value	■■■■■

Comments: The best utility set yet released. A necessity for all Mac owners. Prevents, diagnoses, and, if required, fixes many serious disk and file problems. Makes sleep easier. **Best Feature:** Guardian can recover — quickly and easily — most crashed hard disks on which it resides. **Worst Features:** HD Partition and HD TuneUp could use more power and options. **List Price:** $99.95. Published by Symantec, 10201 Torre Avenue, Cupertino, CA 95014; (408) 253-9600. Requires 128K or 256K ROM and System 4.1/Finder 5.3 or later — runs on everything from 512KE on up. Not copy-protected. Version 1.0 reviewed.

* The product is new. Initial support has been excellent (5 mice). Long-term support prospects are also excellent as both Symantec (publisher) and Micro Analyst (author) have provided superb support in the past.



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Macintosh SE

For Your Eyes Only

In the world of Macintosh security, you don't have to be 007 to protect your data. It just takes time and common sense.

A stealthy figure dressed in black shines a penlight around your darkened, deserted office. Slinking over to your desk, he pries open the locked top drawer and rummages through the debris to find his booty — the disk with your proprietary data. He steals over to your Mac and attempts to open the disk by selecting common passwords. He tries your birth date, then your initials with no luck. Success comes on the third try when he enters your company's name. Now he can steal your data.

The need for data security is one of the most overlooked, yet most important, considerations facing corporate Macintosh users today. A quick unauthorized peek at sales projections, a copy of an internal memo, or the blueprints of a new design can mean mere inconvenience at best, or financial loss at worst.

Although most computer security procedures are oriented toward business and government, security is an issue that affects all users. Security problems can arise from human mistakes. The cup of coffee or can of cola spilled on a disk, the power surge that causes a disk drive head to crash, the slight fingerprint smudge on the magnetic surface of a floppy, or the accidental erasure of an important file can be just as devastating to an individual as to a Fortune 100 company.

RISK AND LET DIE

Over time, we've gone from recording history on cave walls to paper, and now to disks. Though our medium may change, the importance of information remains the same. The heart of data security is how and where you store information.

Let's consider floppy disks. Because of their size, floppy disks are convenient to store and easily transported in a pocket, purse, or envelope. Unfortunately, their portability also makes them easy to misplace. They often disappear into some black hole the minute your back is turned.

The first rule in data security is to

BY JOEL McNAMARA

back up your disks. Even though the chances may be slim that the KGB will break into your office and steal your disks or that a disgruntled employee will rub a magnet over all the accounting floppies, more common occurrences such as fire, accidental loss, spilled coffee, or bad disk media can damage or destroy your data. Many offices have a daily or weekly data backup policy. Backing up data also means saving active files on a regular basis, as you're working on them. That newsletter layout you've been laboring over for the past four hours is gone forever if someone trips on a power cord and you haven't saved your file.

> Data security also means keeping your disks locked up and out of sight. This goes for both data disks and program disks.

If you use a disk copy program like Copy II Mac or Symantec Utilities for Macintosh (SUM) to make backups, be sure the write-protect tab on the original is in the locked or up position (you can see through the hole). Don't take a chance on erasing an irreplaceable (and unbacked up) original by copying the blank disk to it!

Data security also means keeping your disks locked up and out of sight. This goes for both data disks and program disks. A university professor whose entire software collection, along with the documentation, was stolen from his office didn't lose any important data, but the amount of time and effort involved in replacing the applications was considerable.

Data is as safe as the walls and doors around it. If sensitive information is being kept, unoccupied offices should be securely locked with limited access during nonworking hours. Adopting a secure disk policy will do much to eliminate casual borrowing, theft, and general nosiness.

Backup files should also be secured, perhaps even more than the originals. Keep them in a separate location from the original disks, ideally, in a locked, fireproof container. If the need warrants it, backup files can be stored in a safe-deposit box or by a firm that specializes in securely storing computer data.

The next important item to consider is the hard disk. Since the amount of material it can store is many times greater than the amount of material on a floppy, losing it can cause very big problems. Though all the rules dealing with floppies apply to hard disks, hard disks are a bit more difficult to secure.

Although some security programs use a special start-up application or modified system that prompts the user for a password before the computer can be booted from the hard disk, most are easily bypassed when booting the Mac off a floppy. The most effective solution for securing a hard disk is to use a program that partitions off sections of the drive. These partitions are then password-protected to restrict access.

A program that restricts access in this manner is MacSafe. MacSafe allows you to place your sensitive files into a locked "safe" on the hard disk. To add more protection to the files within your safe, you can place them in a secret compartment requiring an additional password for access. MacSafe also allows for encryption.

If your data is really sensitive, and the drive is an external unit, consider physically locking the hard disk up when it is not in use, somewhere away from your Mac.

Short of locking up your hard disk, you can use The NightWatch. Providing start-up password protection for your hard disk, this program hinders unauthorized use or erasure through three utilities: Administrator, Shut Down, and User. User acts as a key, which cannot be copied, and is used to unlock your hard disk. It also keeps track of the users who unlock your hard disk as well as when they do so. Through the Administrator, you can assign numbers to User disks. Shut Down actually shuts down and locks up your hard disk.

Finally, know what data you have. Make it a regular practice to inventory your files. Use any of the commercial or shareware programs available, such as DiskLibrary. [*Editor's note: Be sure that the program you select has good printing features. I've often been helped in finding extra copies of seemingly lost files by having printed catalogs of my hard disks.*] Periodically check your inventory to make sure all files are present and accounted for. If something is missing, determine what it is, when you saw it last, and if it was important.

A VIEW TO A MAC

Passwords have been a part of security systems since the first millennium

Security Directory

Harry R. Chesley
1850 Union Street
San Francisco, CA 94123
Pack It III; $10.00 shareware

Kent Marsh
1200 Post Oak Road, Suite 210
Houston, TX 77056
(713) 623-8618
MacSafe; $149.95
The NightWatch; $149.95

Raymond Lau
100-04 70th Avenue
Forest Hills, NY 11375
MacNet: RayLau
StuffIt 1.40A; $20.00 shareware

Mainstay
5311-B Derry Avenue
Agoura Hills, CA 91301
(818) 991-6540
(818) 991-5037
N'cryptor; $39.95

MCTel
5070 Parkside Avenue, Suite 1300
Philadelphia, PA 19004
(215) 879-3819
P/C Privacy: Personal/Confidential; $95.00

SuperMac Technology
295 N. Bernardo Avenue
Mountain View, CA 94043
(415) 964-8884
Sentinel; $295.00

B.C., when they were used to control access to various parts of Solomon's Temple. The computer world has been using passwords ever since computers were used by more than a few "high priests." Today, on the Macintosh, passwords serve to protect databases and spreadsheets, encrypt data, and limit network and on-line service access. Despite the popularity and seeming security of passwords (which are also referred to as *keys*), they are a very weak link in any security system. That's because the integrity of a security method relies not just on a simple combination of characters, but on the user who makes use of those characters.

It is important to make passwords difficult for the potential eavesdropper to guess. Don't use passwords like the name of your spouse, pet, or child (remember *War Games?*), your first name, last name, or initials, your birthday or wedding anniversary, your social security number, a word relating to a personal interest, your company's name or some derivation, your job function or department, single letters of the alphabet (A to Z), or single numbers (0 to 9) (see sidebar "Common Passwords"). Although you may think you're clever using one of these words, dedicated computer snoops know that many users use these same passwords over and over again.

You have several methods available for creating secure passwords. They include: combining two dissimilar words (*taco* and *sushi* to make *taco-sushi*), using foreign words (*luotuo* — Chinese for camel), mixing significant words, dates, and initials (AEOz1934 — the initials of your Auntie Em, her maiden name, and the year the big twister hit), or selecting a word and adding a few random characters to it (slugtxa).

An alternative to a password is a "passphrase." Passphrases can be memorable lines of poetry, passages from books, famous quotes, or any other series of words. Although using passphrases increases the number of possible guesses a nosy person needs to make, some systems may limit a password to a certain number of characters.

> If you can't remember your password, then it's too long or too cryptic.

Passwords and passphrases are only as secure as you make them. Don't write your password down somewhere and hide it. If you can't remember it, then it's too long or too cryptic and you should change it to something simpler. The most common locations an experienced password pilferer will search for your secret password are in a desk drawer, placed in a book, left in a purse, taped to your Mac, on a Rolodex card, in an address book, or discarded in the trash.

Your own co-workers can be a threat to your password. At times it's pretty difficult for people who work together not to stumble, by accident or design, onto one another's passwords. Some folks even have the rude habit of rubbernecking over your Mac as you type in your password. Treat your password like a personal possession, not like a baseball trading card. If you use passwords for a variety of purposes, don't use the same one for everything. This will eliminate someone having access to everything with just a single key.

It's also a good practice to change

Computer Security Glossary

ASCII — American Standard Code for Information Interchange (pronounced "askey"). A code developed by American National Standards Institute (ANSI) to achieve compatibility when exchanging data.

Cipher — Any text that has been altered, a character at a time, to obscure its true meaning. Encrypted text is called ciphertext.

Code — A system that replaces complete words with other words or symbols to hide their meaning. For example, Apple = BIGRED, IBM = 45623, or battleship = BAPXC.

Cryptography — The making and breaking of codes and ciphers.

DES — Data Encryption Standard. An encryption technique developed by IBM and the National Bureau of Standards for encrypting data. Said to be unbreakable, although many people in the cryptography field say it is weak enough to be broken by the NSA and their Cray supercomputers.

Decryption — Unscrambling encrypted data so it is readable.

Encryption — Scrambling data, a character at a time, so it becomes unreadable.

Key — A string of characters that is used as the basis for encrypting and decrypting data. Also referred to as a password.

NSA — National Security Agency (or No Such Agency or Never Say Anything). The hush-hush, top-secret folks who are responsible for making and breaking codes and ciphers for the United States.

Tempest — A security standard set by the government that eliminates electromagnetic transmissions from computer devices. Several years ago, someone found out that the magnetic signals that make up the computer's screen display could be intercepted and then redisplayed elsewhere. You can currently buy Tempest Macs and LaserWriters, although they cost and weigh about twice as much as normal, due to the shielding.

Work Factor — The amount of time and effort required to break through a security system.

Things That Go Boom

One way to judge the acceptance and success of a personal computer is to total up the amount of shareware and public domain material available for it. The Mac certainly shines in this regard, with an abundance of little programs that seem to do just about everything. Unfortunately, there can be a dark side to these helpful little utilities. Someday, you may encounter a program referred to as a WORM, Trojan horse, or virus. These programs are named or disguised as something interesting or useful, but in reality can maliciously go out and reformat a disk, start deleting files, or complete any number of other disastrous file operations.

The Macintosh community has recently been plagued by several such nefarious and destructive applications. The No. 1 rule when dealing with a program of undetermined origin is to never place it on a hard drive or an important disk. Always test an unknown program on an unwanted floppy first. If you're still suspicious, you may want to examine the program with Fedit or ResEdit, searching for messages or resources that might reveal the true nature of an application.

your password every few weeks or so. If you have even the slightest inkling someone may know your password, change it immediately. Employers should be sure to change or delete the passwords of former employees when they leave the company.

FILES ARE FOREVER

Anybody who has ever read a spy novel knows that the office trash can is a prime hunting ground for information. The trash can on your Mac can also provide quite a few tidbits of information to a snoop. When you put a file in the trash and empty it, the file is still on the disk. The only thing deleted is the file directory information — the actual bytes of the file remain intact. As time goes by and other files are added to the disk, the space occupied by the deleted file is eventually overwritten with data from new files.

With bits and pieces of the file still around, disk utilities such as SUM, MacTools, Disk 1stAid, and Fedit have options that can recover deleted files. That's great for accidental deletions, but not too good for security. You don't even need the original disk to perform a recovery. Programs that sector-copy a disk retain all of the deleted file information in addition to copying the regular files.

One way to permanently get rid of unwanted files is with a public domain program called Complete Delete, available from most user groups and electronic services. This utility writes a series of zeros to the file and then deletes it, leaving no remnants of the original file's data on the disk. To delete the contents of an entire disk, don't throw all the files in the trash and empty it. Use the Finder's Erase Disk command; it reformats and initializes the entire disk.

ENCRYPTOPUSSY

The modern computer equivalent of the ancient Spartan coding device (the scytale) is encryption software. An encryption program simply scrambles a file, based on a user-selected password. Once encrypted, files become an unreadable hodgepodge of letters, numbers, and symbols. Files are restored using the program with the same password.

Encryption programs use a variety of methods to scramble data. Techniques can be as simple as substituting one character for another or as complex as making repeated passes over the data, encrypting each character with a different technique each time.

One of the more popular methods of encrypting files is the Data Encryption Standard (DES). The DES algorithm works by dividing data into eight-character blocks and then enciphering them one after another, using a password as the basis. The DES method is very secure, with over 70 quadrillion possible keys, and no real known weaknesses in the actual encryption algorithm. Among the encryption programs available, N'cryptor is the easiest and fastest way to protect your files. Its detailed documentation walks you through an example of how to encrypt and decrypt a file.

MacSafe has two encryption methods QuickCrypt, which is the default method, and DES. Sentinel is a five-level security program that takes the contents of files and encrypts them through a number of methods, including SuperCrypt and DES. Both of these are reportedly the fastest on the market.

Two shareware programs, Pack It and StuffIt (version 1.40 and higher) also support encryption.

A secure data encryptor will decrypt a file no matter what password you enter. If the correct key is entered, the file is restored.

Although encrypting data sounds like an ideal security method, it has several drawbacks. The first objection is time. Complex encryption methods such as the DES require a large amount of calculation time. In an effort to speed things up, some computer security firms have developed "DES chips," which perform the actual encryption in hardware instead of software. Even programs that use a fast encryption method still need to be loaded, have a file selected, and run. Encrypting data adds several steps and at least several minutes to what often is already a busy day.

Although not a common problem, another disadvantage to encryption is data error sensitivity. One small error in an entire block of encrypted text can cause error rates of up to 50 percent when the data is decrypted. Although dropping a few characters may not be a problem in a normal text file, an encrypted file with errors may never be successfully decrypted in a readable form.

Finally, there is the question of how

COMMON PASSWORDS

If your "private" password is on this list, change it. These are some of the most common, and thereby easily guessed, passwords.

Account	**Mac**
Aid	**Me**
Alpha	**Mine**
Beta	**No**
Computer	**None**
Dead	**OK**
Demo	**Okay**
Dollar	**Password**
Foo	**Please**
Games	**Secret**
God	**Sex**
Hack	**Superuser**
Hello	**System**
Help	**Test**
Intro	**Works**
Kill	**Yes**
Love	

secure an encryption method actually is. With many Mac encryption programs, there comes a point of tradeoffs for user friendliness versus protection. Many applications will prompt the user for a password when a file is decrypted. If an incorrect key is entered, most will beep and ask you to try again until you get it right. This is a weak feature in any protection scheme because it allows a brute-force password guessing attack by not limiting the number of unsuccessful tries; it also indicates that somewhere in the encrypted file the password is stored. Usually a proficient assembly language programmer armed with a disassembler and a copy of the encryption program can discover the password and its location.

A secure data encryptor will decrypt a file no matter what password you enter. If the correct key is entered, the file is restored. If an incorrect key is used, the file becomes further jumbled. The only place the password is located is in the head of the individual who is decrypting the file. If you use a more secure system that sacrifices friendliness for increased protection, be sure to keep a backup of all encrypted files. If you don't catch it, a minor typo when entering the key can scramble the data beyond recovery.

ON YOUR MAC'S SECRET SERVICE

With the popularity of networks and modems, you as a user should be aware of some security issues.

- If information you're sending to a remote location is critical or sensitive, you should encrypt it before sending it off. It's fairly easy to intercept communication traffic between two computers. To remedy this, you can use P/C Privacy: Personal and Confidential. This allows you to send an encrypted file (graphics, too) over electronic mail systems.
- Many telecommunication programs have macro features that execute a series of commands easily. It's nice to be able to click a button or select a menu item and have your modem dial an online service and log in for you. From a security standpoint though, it's an accident waiting to happen. If someone obtains your modeming disk, whether borrowed, copied, or stolen, it's just a matter of using the existing macro to gain access. Even with a service like CompuServe, where you're not storing critical data, someone could easily rack up quite a bill at your expense. A more secure method is to create a macro that just dials and connects to a service. After you manually log in, other macros can be used to execute common commands. Keep any telecommunications disk secure, or limit what macro features you use.
- Although the problem of "crackers" is overstated, especially for microcomputers, you should keep tight control over your network if you have one for your office or an individual Mac hooked up to a modem so users can work at home. Be sure all your data is always backed up.
- When sending files or electronic mail to another user through a network, make sure it's to the right person. Once something has been sent, you can't change your mind and reach back into the mailbox and take it out.
- A shared network printer is a cost-effective time saver. But a common-access printer also means a common-access source of information to anyone in an office. If you need to print sensitive data, make sure someone is waiting to collect it as it is printed.
- In an environment with networked multiple printers, make sure you know where your output is going. Don't second guess Chooser. It's all too easy to accidentally send restricted files to the wrong LaserWriter and the wrong people.

Keeping your data secure isn't very exciting. In fact, security is pretty dull. It just comes down to establishing a routine to make sure your information is protected, and conscientiously following it.

Data security must be tailored to the needs of your own particular situation. If you're an average user, a simple system of backing up your disks and buying a surge suppressor may be all you need. If you use sensitive data, you may want to encrypt it and store copies of it in a vault.

Also, you might want to take into consideration what code breakers call the "work factor." The work factor is the amount of time and effort it would take someone to breach your security, whether by guessing a password, deciphering an encrypted file, or sneaking onto your network. You must create a work factor that becomes both unreasonable and unacceptable to any potential eavesdropper.

Implementing data security procedures runs pretty much counter to the whole idea of the Macintosh. It increases the daily workload, imposes burdens on employees, and takes up more of your time. However, all of these drawbacks will seem trivial the day your security system prevents information from being lost forever. Setting up data security practices and following them is cheap insurance that every Mac user should consider.

JOEL MCNAMARA IS A PROGRAMMER FOR SATORI SOFTWARE IN SEATTLE, WASHINGTON. DESPITE HIS PRESENT NORTHWEST LOCALE, HE SERVES AS EDITOR OF THE UNIVERSITY OF UTAH MACFUG NEWS.

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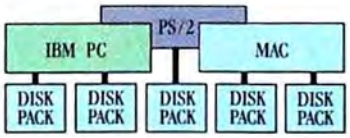
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by Guy Kawasaki

How to Succeed in Mac Software

You may think I'm dumb to write this column. You may be right. My competitors may think that I'm going to purposely give bad advice. They are wrong. In any case, here are some of my thoughts on how to succeed in the Macintosh software marketplace.

COURT THE CULT

There is a small percentage of Macintosh owners that make up The Cult. For years they lurked behind the scenes, sneaking in a few Macs to do Desktop Whatever whenever they could. Today they have been vindicated, and their business cards say "I Told You So." They are impervious to advertising, despise marketing presentations, and twitch at the sight of yellow ties.

Fortunately for those of us who know — and unfortunately for those who don't — they can make or break a Macintosh product. No amount of Chiat-Day advertising, Regis-McKenna PR, or Apple co-marketing can Command-Z what The Cult says. So how do you successfully court The Cult?

First you have to find them. That's easy — they're on CompuServe and in user groups. Second, you need to apply the Gassée design algorithm — make a product that appeals to the passenger and the sailor in all of us. A passenger gets on a ship, plays shuffleboard, and eats at the captain's table. A sailor hoists the sales, goes into the engine room, and swabs the deck. The Cult loves products that you can smoke or roll your own.

WORSHIP USER GROUPS

User groups are the bleeding edge of Macintosh marketing. BMUG's slogan is, "They came. They demo-ed. They hung." I must confess that I love user groups, and I hope that other database developers never figure out how to work with them.



The key to working with user groups is to make a long-term, continuing commitment to them. This means that you don't just use them when you have a new product but that you work with them all the time. Activision even has a full-time user-group evangelist. Here are a few user-group tips:

First, give four to five user-group demonstrations per month. Never send someone who doesn't know Macintosh and your product cold, and never start the demo with a ½-hour dissertation/video on your company's mission, strategies, goals, and objectives. These people came to see a product, not hot air.

Second, offer user groups a great deal on your product. Aldus sells PageMaker to user groups at $100. Guess what the user groups publish their newsletters with and which desktop publishing program gets the most free publicity?

Third, provide user groups with samples for their software libraries. One of the primary functions of user groups is disseminating public domain and shareware software. ACIUS provides user groups with a demo version of 4th Dimension, sample files, and test-drive manuals.

Once you're convinced of the power of user groups, you then need to find them. Apple has a list and will do mailings to user groups for you. Or you can find them on AppleLink by searching for all addresses that contain "UG."

SCRATCH 'N' SNIFF

Mac owners are product fanatics so they want to scratch, sniff, and test-drive their software before they buy. Test-drive kits that contain limited versions of your software and a manual are the single best marketing tool for Mac software. Not VideoWorks or HyperCard brochures-on-a-disk, mind you, but macho, working copies of the software with a limit on printing, saving, or number of records. Check out TrueForm for a good example of how to do it.

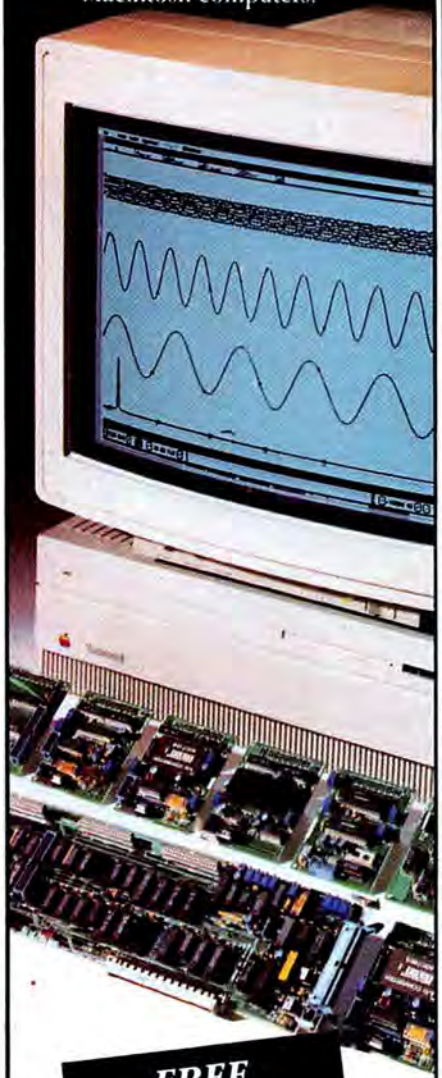
There are three ways to distribute test-drive kits. First, sell the kits via a toll-free number through your advertising. Buying the kit is an effective call to action, and this will separate the serious leads from the maniacs who circle 85 reader requests on bingo cards. You might even recover some of your advertising expense.

Second, distribute the kits electronically via bulletin boards and AppleLink (send inquiries to "SW.DEMOS"). If you're afraid that people will download the software without documentation and conclude that your software is hard to use, you can compress and join the program, sample files, and documentation together with Stuffit or some other program that compresses large files.

Finally, provide the test-drive kits to the user groups. They will put them in their software libraries and sell them for two to three dollars per disk. Send them extra copies of the manuals so

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that members can test-drive your software with documentation.

REACH OUT AND TOUCH SOMEONE

Support is a pretty "in" subject to talk about these days, but talk is cheap. The Macintosh owner has an insatiable appetite for contact with his vendor. And not just "How do I make it print?" but warmth and camaraderie 24 hours a day, 7 days a week.

> Working with Apple Cupertino is a hard trick to master. You may even have to marry an Apple employee to figure this one out.

The best method we've found is an electronic bulletin board like CompuServe. (Apologies to the other services, but CompuServe is the one that has threading and Navigator.) CompuServe has a forum for Apple third-party developers called AppVend. Here you can stay in touch with your customers for all of those 24 hours a day, seven days a week.

CompuServe embodies the spirit of Macintosh — sharing information, frustration, discovery, and sample files. I'm afraid to tell you how many people bought 4th Dimension because of "the traffic in your forum." So reach out to Neil Shapiro and get yourself a forum.

RIDE APPLE CUPERTINO'S COATTAILS

When the six-color elephant rumbles, jump on his leg. Apple can significantly increase the chances of your success with co-marketing. Unfortunately, working with Apple Cupertino is a hard trick to master. You may even have to marry an Apple employee to figure this one out. Mastering Apple boils down to two things: understanding why Apple co-markets a product and how to work with the Apple field sales force.

Apple works with a developer for one very simple reason: to sell more Macintoshes. That's it. If your product really sells more hardware, you've got a good shot. What you have to do is figure out how Apple is trying to sell Macintoshes, find someone in Cupertino to be your champion, and get on the bandwagon. It helps if your software doesn't run under Windows and if it helps sell you-know-what.

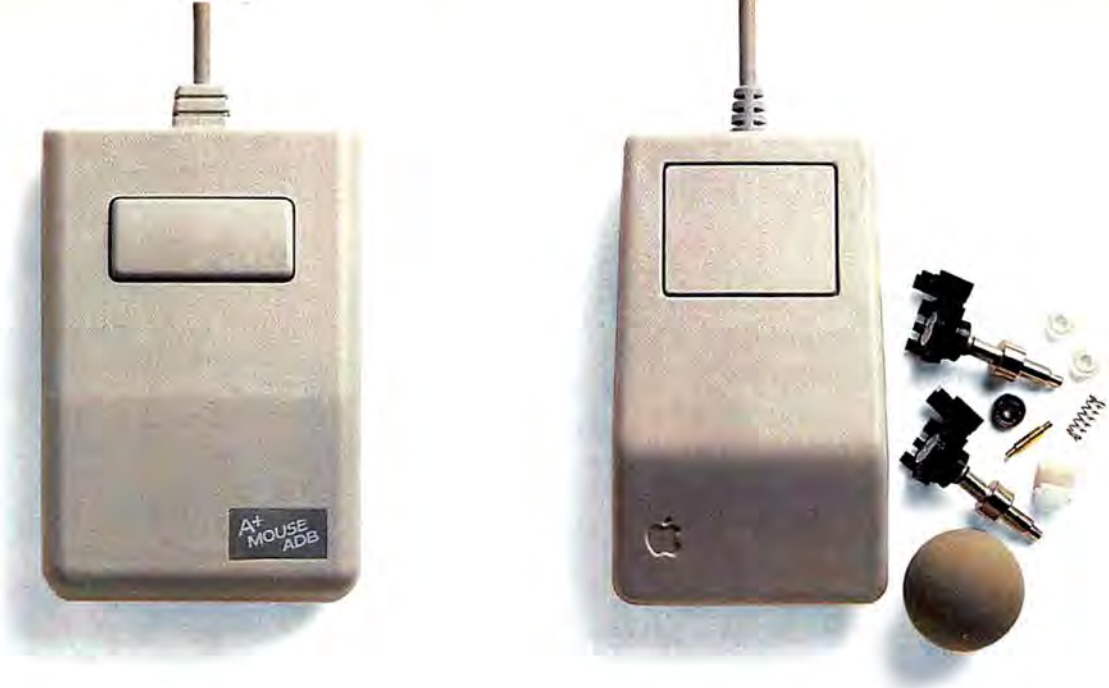
Every developer thinks his software sells hardware, so what good is this advice? Well, not everyone's software sells hardware — for example, games and DAs don't. Be realistic about what level of co-marketing you'll get. If Apple is positioning Macintosh as a business machine, an arithmetic package isn't going to get much help. Ask yourself, "Would I buy a Macintosh to run this?" to see if you'll pass the Cupertino test.

When dealing with Apple, there are two attitudes to avoid at all costs. First, "My software will save Apple." (Too arrogant, too common, and too late.) Second, "My software will open new markets." (This worked only once — for Aldus.) The perspective that works best is, "My software will help increase hardware sales within 90 days."

Why does this one work? Because Apple is a publicly traded company that is worried about quarterly financial performance. They want immediate results — not in the next 5 to 10 strategic years. Also, because Apple reorganizes once a quarter, your Cupertino champion may not be able to help you after 90 days. You've got to take it when you can get it.

SIGN UP THE FIELD

There are two Apples — the Corporate Pukes (I can say this because I was one) and the Field. Apple field personnel are second only to user groups when it comes to loving Macintosh, and they are a pleasure to deal with because they are independent of the political games of Cupertino. The rubber meets the road every day in the



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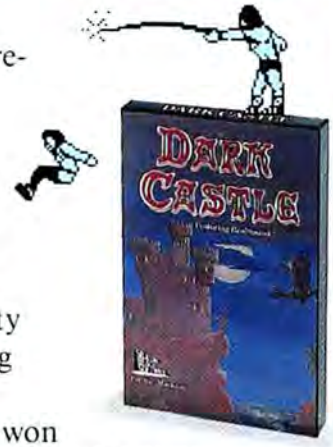


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So you think the castle is safer after all? Think again. And welcome to *Beyond Dark Castle,* which picks up where *Dark Castle* left off. The Black Knight has returned, but this a worthy sequel to *Dark Castle.* venomous snakes, flying monkeys and screaming vultures make him even harder to reach. Scrolling scenes, more sounds and a cataclysmic finale combine to make



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TWO BITS' WORTH

field as they call on dealers and major accounts.

Apple field personnel have a constant need to show dealers and major accounts exciting new products that differentiate Mac from the IBM PC.

> If you want to bag an elephant, you've got to go to the jungle. I've yet to bump into any Mac people at the Carnegie Deli.

If your software gives them an edge in selling Macintoshes, you're in good shape. Go directly to the Field, do not stop in Cupertino, and do not ask for permission. The Field can include you in joint sales calls, regional business forums, recommendations to dealers, and training. Get a list of sales offices and pound on them.

MOVE TO CALIFORNIA

This one may be the hardest to swallow. The action is in Cupertino — Apple employees (engineers, programmers, co-marketing), dealers (BusinessLand, ComputerLand), magazines (*MacUser, Macworld*), rags (*MacWEEK, Macintosh Today*), and analysts (Stewart Alsop, Tim Bajarin).

If you want to bag an elephant, you've got to go to the jungle. Visiting California is OK, but living here is infinitely better for business because of the serendipitous meetings you can have at Ikenohana's Noodle Bar and The Good Earth. I've yet to bump into any Mac people at the Carnegie Deli.

So there you have it, almost all I know about how to succeed in the Macintosh software marketplace. I hope it all works, because I practice what I preach. Good luck, and remember that you have a friend in the database business.

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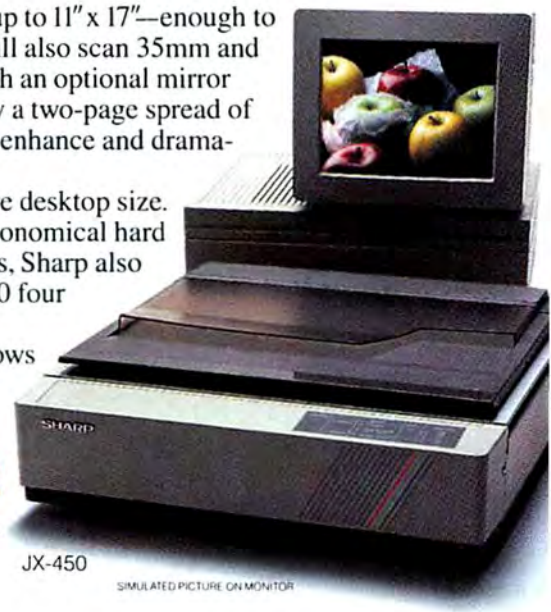
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What It Isn't, What It Is

by Freff

This is a column about music — from a viewpoint that stands on the metaphorical shoulders of the Macintosh, to be sure, but always music first and Mac second, which is as it should be. Music is the bigger topic. Our chameleon computers are impressive little number-crunchers, but they need a context to give them meaning — and music is just about the oldest, most universal context there is, transcending barriers of race, culture, politics, time, and even species. (You watch: what with New Age records jamming the racks, any day now the whales will file a class-action suit for their overdue performance royalties).

Since before we knew there was such a thing as Before, music has been one of the Really Big Backdrops. And what do us human types do when constantly surrounded by something? We ignore or misunderstand it. It becomes background noise, relegated to no consideration, or it gets thrown into such sharp, sudden focus that its greater continuity is distorted and sometimes lost. We start to think of music as a thing apart, a singular gift which belongs only to singular people. Itzhak Perlman, now *there's* a musician! And that Byrne guy with the Talking Heads, how does he think of all those wild things? Gosh, I could never do that . . .

This is wrong, of course, but understandable. Think of it as the flipside of technophobia.

I bring it up here because it proves that we have an unclean slate. Before we can talk about music as it relates to a protean tool like the Mac, we have to clear up some nasty misconceptions about music itself. We have to get a few things straight.

Ready for the real facts?

Music isn't the notes. Never was, never is, never will be. When Charlie Parker wailed on his saxophone, it



wasn't the notes that made the music, or even the notes plus the rests between the notes and the clack of padded metal keys and the sweat streaming off his brow under the hot lights of the bandstand. Same goes for recordings of his sets, or the inky little dot-and-tail squiggles of perfectly written transcriptions. These all conveyed his music, true enough, but they were (and are) only representations, not the music itself. That honor belongs to something intangible and emotional that is our birthright as thinking entities. It lives inside composer, player, and listener in equal measure, and can be detected only to the extent that it moves each corner of the triangle. The essence of music, from birdsongs to Byrd, is a completed circuit. It is perception communicated through sound.

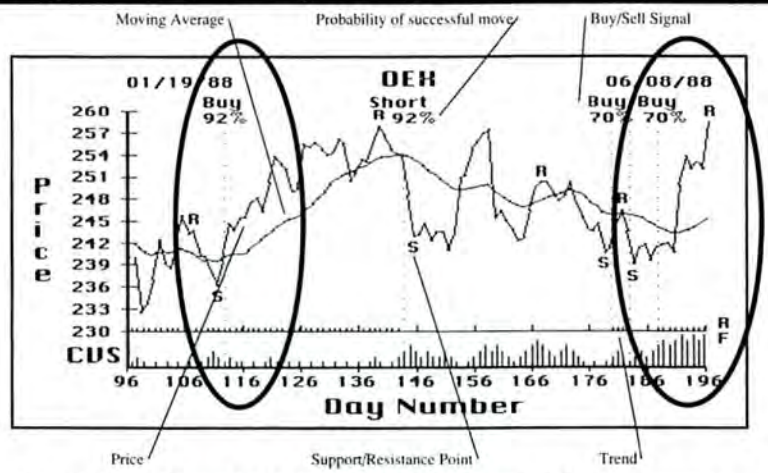
Music isn't music-making. Is your postman the contents of your mail? Is your television set the programs you watch? Are your paychecks the things you buy? No, nope, and *nada.* They are simply the immediate mechanisms of a transaction. The same goes for every blown reed, bowed string, and struck key since the beginning of time.

Music isn't difficult. Not at all, as this simple trick of the imagination makes clear. Call up the memory of some familiar piece, like a Christmas carol, or "Take Me Out To The Ball Game," or "Lady Madonna." Run through it a few times in your head and then start mucking with the orchestration. Try to hear the piece played on a kazoo, or sung by the Mormon Tabernacle Choir, or belted out in automobile crashes and steam whistles. For most of you, after only a little thought, this will be a breeze. Truth is, music is easy. It can't outrun your imagination. What's difficult is music-*making.* That's where things get hard, because reality is a far less tractable landscape than the one inside your head. Hiring the Mormon Tabernacle Choir takes big money (hiring them to sing "Take Me Out To The Ballgame" costs even more). Learning the jargon — what's a hemisemidemiquaver? — takes time. And getting good on an instrument so you can play it yourself takes not only time but also a considerable emotional commitment.

Music has always been high-tech. I had a friend once who couldn't stand synthesizers because they were (shudder) "technological." She loved string quartets, though, because they were "natural," thus conveniently forgetting that violins, violas, and cellos are made from trees but don't grow on them. Indeed, the instruments made by Stradivari and Guarneri are marvels of acoustic and chemical technologies. Pianos rely on advanced metallurgical techniques for soundboards that can hold up under strings with eighteen tons of collective pull. Classical guitars made a quantum leap forward when Segovia won acceptance for durable, tunable nylon strings over cantankerous and cranky sheepgut. The histories of science and music are deeply intertwined. Every instrument ever made, from the first reed flute or log drum to today's digital keyboards,

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is an expression of the highest levels of locally available technology. And if you don't think so, go blow a paper comb and then ask yourself where the paper and comb came from.

The Macintosh is a musical instrument. The converse of every instrument being based in new technology is that every technology, sooner or later, becomes the basis of a musical instrument. After a hard day of being serious about his or her technical playtoys, just about every technocrat's natural inclinations turn toward fun. Ben Franklin built glass harmonicas. Thomas Alva Edison, after inventing the light bulb, created both sound recording and motion pictures. Today it's the turn of the laser and the microchip. Thanks to MIDI, a Mac can record, edit, and notate your compositions. It can program your synths and drums machines. It can give you ear and hand training. It can edit and filter sampled sounds. It can even jam along with you based on certain set rules of algorithmic composition. But — and this is the message to carry back to music software vendors — exciting though these things are, they are still in their infancy. The Mac's potential as an instrument in *its own right* has barely been tapped. It's a washtub bass waiting to be turned into a Stradivarius; the how and when of that evolution is something we'll be covering in months to come.

Have a better picture of music now? See the grand melody of the forest instead of the staccato of the trees? One last glimpse then, for hope and glory:

You are a musician. Maybe you don't play an instrument, not even air guitar. Maybe you've never sung in the shower. None of that matters. Just being human makes you a musician. It's built in. You're hardwired for language, the proof of which is that you read these words and derive meaning from their selection (the notes) and rhythm (the beat) and intonation (the melody). You perceive and you communicate — so why not let technological instruments native to your time, like the Mac, provide the sound?

Music is your native tongue, my friends. It's just waiting for you to speak it.



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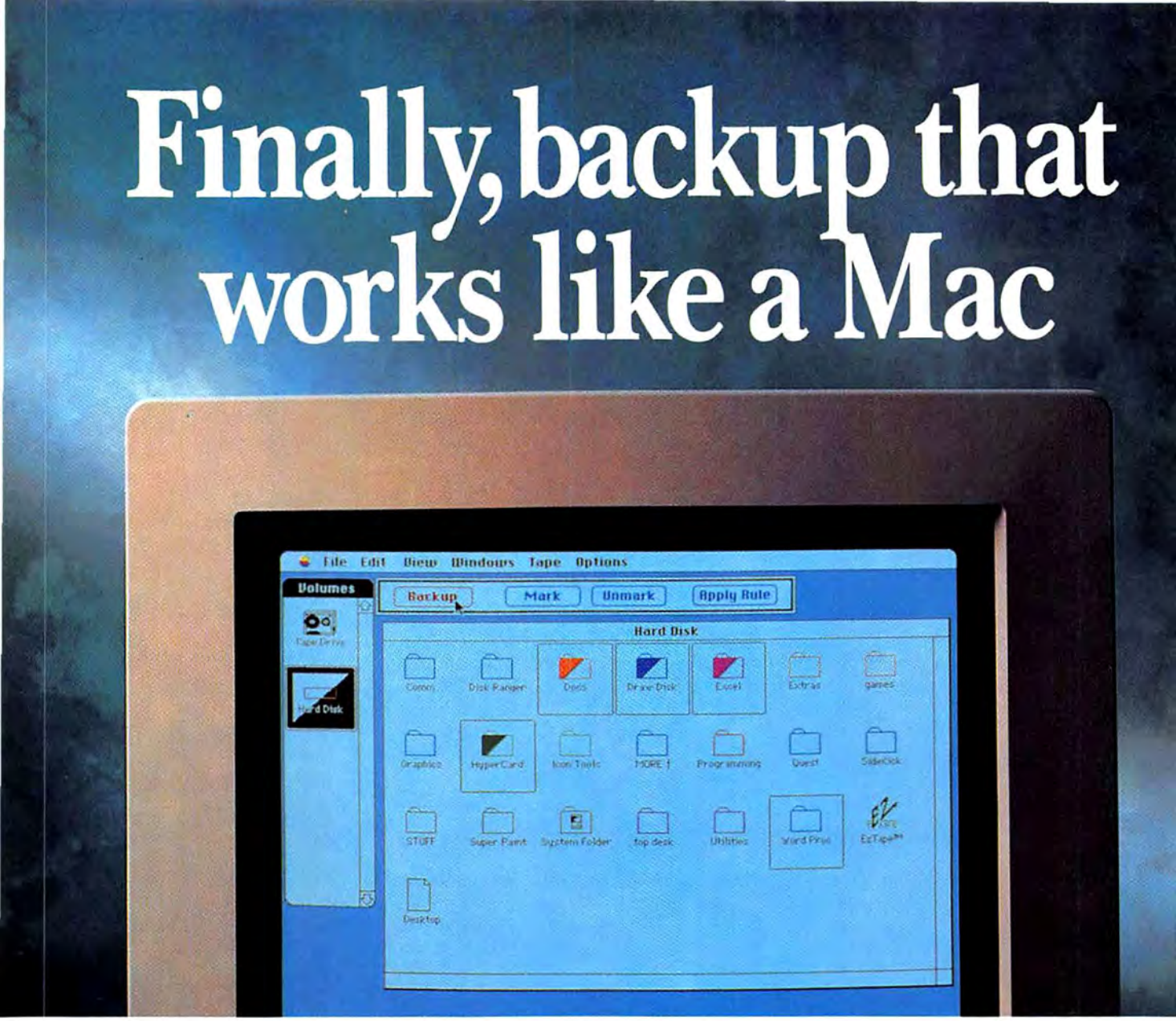


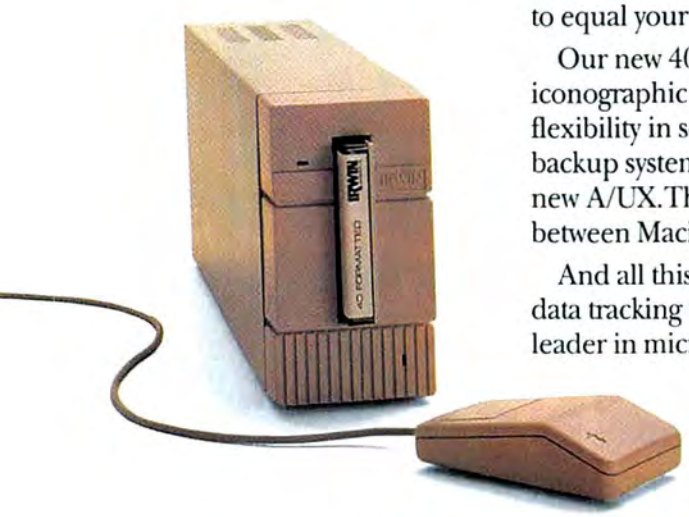
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Character Analysis
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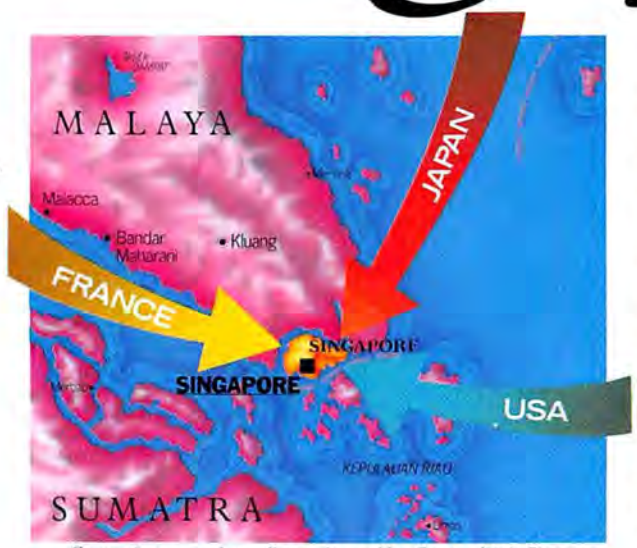
No, "DTP" doesn't mean Don't Turn Page. It's the name of *MacUser*'s new desktop publishing section. For you Mac publishers who believe "too much is not enough," DTP will provide even more reviews, product updates, and power user tips to get you through the nights (and days).

We'll show you how to use scanners and optical character readers to feed photos and text into your Mac. There'll be step-by-step tutorials on page layout and computer imaging so that What You See is *really* What You Get. Features on font editing, gray scales, and color will help you decide what's appropriate for your publication. We'll also cover hardware areas, including that subject closest to the heart of every publisher: printers and printing.

Of course, those of you out in the trenches probably have a few tips and tricks of your own. If you'd like to share your trade secrets with other desktop publishers, send them to DTP, c/o *MacUser*, 950 Tower Lane, 18th floor, Foster City, CA 94404.

BY AILEEN ABERNATHY

Americans Capture Singapore!



Competitors came from all over the world to Comtec '87 in Singapore. And when the battle was over, Course of Action from America had been chosen the Best Designed Software Product of the Year.

In Singapore, we captured their imaginations—and their votes.

As a result, what one reviewer has called a "startling authoring system" and "the talk of the town" was named the year's Best Designed Software at Comtec '87.

This "startling" system is called Course of Action.™ It lets you create, without *any* programming knowledge, complete multimedia lessons and presentations—with exceptional graphics, complete text and animation, and real voices and music. And with typical Macintosh™ user-friendliness.

You can ask open-ended questions. And create as many branches off the responses as you want.

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We think Course of Action may be the most creative tool now available to teachers, trainers and presenters. That enthusiasm is shared by Comtec's judges, and echoed by training expert John Moscicki, who has said, "I have seen the future of learning. This is it."

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Finally FullWrite

Hold the icons, hold the headers. Your special orders didn't upset them (Ann Arbor/Ashton-Tate). Combining features of word processing and desktop publishing, FullWrite lets you have it your way.

FullWrite Professional. It's not just a program, it's an adventure. — No, that's not Ashton-Tate's advertising slogan for FullWrite, but it could be. FullWrite is not only one of the most long-awaited programs for the Macintosh but also one of the most feature-laden. Finally making its debut a year after originally promised, FullWrite arrived with almost every feature that anyone could want.

There's a reason FullWrite is so feature-packed. It was originally designed from a market research study, and even after it was in development, suggestions from user groups and from users of on-line services were heeded. The result is a word processor which, wherever possible, offers a choice of how to do things. FullWrite is not for the indecisive.

FullWrite's a word processor! No, it's a page-layout program! Would you believe FullWrite is a little of both? Talk about an identity crisis. FullWrite is a very high-end word processor, with more features than any other word processor. But with its truly advanced capabilities, such as kerning, sidebars, and the integrated drawing environment, it begins to rub shoulders with page-layout programs. For simple page formats like newsletters, FullWrite can do it all.



BY ROBERT R. WIGGINS

CHAPTER 1: BASIC UNITS

FullWrite has a distinctive "look" because of its design. The first thing

I KNOW THAT REPORT IS IN HERE SOMEWHERE.



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A phrase, a fact, a note, a date. If you need it, GOfer finds it.

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New York residents add applicable sales tax. GOfer™ is the Text Finder™ utility from Microlytics™. GOfer, Text Finder and Microlytics are trademarks of Microlytics, Inc. Other brand and product names are trademarks or registered trademarks of their respective holders. © 1988, Microlytics, Inc. All rights reserved.

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you'll notice is the chapter orientation. Documents can be divided into multiple chapters, which will make book authors happy. The chapter is also the basic unit of work in FullWrite, and FullWrite keeps in memory only the current chapter (which is important, since FullWrite is so memory hungry).

Each chapter has a "chapter ruler," which controls the page layout of the chapter. The number of columns and the settings for the column margins are controlled with the chapter ruler. Additional rulers called tab rulers can be placed anywhere in the document to control tab stops.

ICON BAR HOPPING

Scrolling through FullWrite's icon bar is like being a kid loose in a candy shop. Acting as the control point for many of FullWrite's features, the icon bar contains mini images of rulers, notes, pictures, sidebars, and outline items. Selecting one of these icons will bring up a menu specific to that type of item. Double-clicking one of these icons in this specialized menu opens the item to let you modify it.

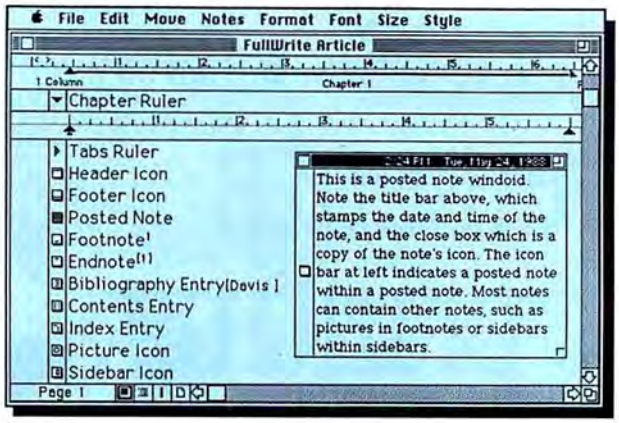
NOTING REMINDERS

The heart of FullWrite's power and flexibility is its concept of "notes" that can be embedded in the text of the document. When a note has been placed, an icon representing the note appears in the icon bar to the left of the particular line. Two special kinds of notes, pictures and sidebars, are covered separately.

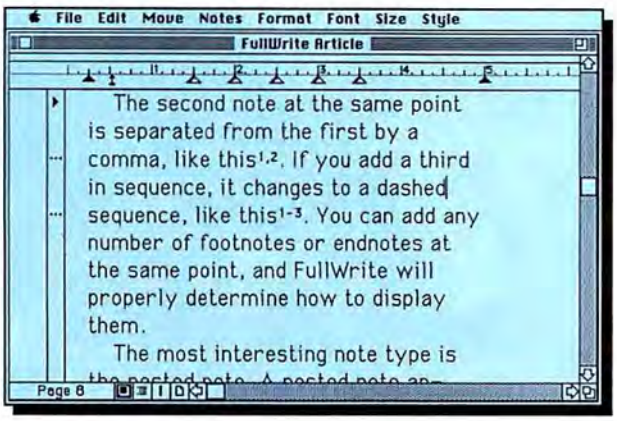
When a note is opened, it appears in a small "windoid" in the document window, with a miniature title bar complete with zoom box and close box, and a miniature grow box. These windoids are always in front of the document, although you can leave them open and still work on the document. (You may have to move them out of your way!)

Headers and footers in FullWrite are notes, and come with a full range of options. Headers and footers can appear on every page, left pages only, or right pages only. You can have the header or footer skip the first page or the last page.

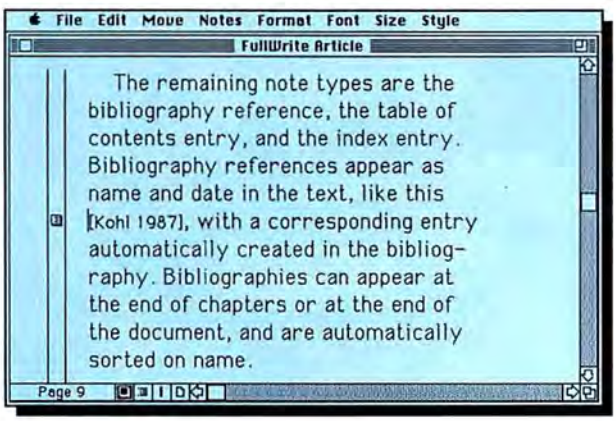
Because headers and footers are



There are various icons that can appear in the icon bar. Grayed icons represent open items. Also pictured is a posted note "windoid," which is a subwindow that is always in front of the document.



FullWrite handles footnote and endnote numbering, even when there are multiple references at the same point in the text.



Bibliographic references appear in the text as name and date. FullWrite automatically generates the bibliography.

notes, they are associated with specific points in the text. So if changes cause the text to move to another page, the headers or footers will follow.

FullWrite supports both footnotes and endnotes. Footnotes appear at the bottom of the page on which the reference occurs, and endnotes can appear at the end of each chapter or at the end of the document. FullWrite will handle the numbering automatically, or will let you specify a starting number, or will let you specify any symbol to be used. Choices abound in this program. You can even number footnotes and endnotes completely manually by specifying a starting number for each note.

One of FullWrite's best "gee whiz" features is how it handles multiple footnotes or endnotes at the same point in the text. The second note at the same point is separated from the first by a comma, like this. If you add a third in sequence, it changes to a dashed sequence — like this. You can add any number of footnotes or endnotes at the same point, and FullWrite will properly determine how to display them.

The most interesting note type is the posted note. A posted note appears in the icon bar, and can be opened and edited, but is not part of the document. It's exactly like pasting a small note to a piece of paper, or scribbling a note in the margin. This feature can be invaluable in a shared document work environment. It's also handy for those who scribble notes on napkins, scraps of crumpled paper, and store receipts.

The remaining note types are the bibliography reference, the table of contents entry, and the index entry. Bibliography references appear as name and date in the text, with a corresponding entry automatically created in the bibliography. Bibliographies can appear at the end of chapters or at the end of the document, and are automatically sorted by name.

PICTURE THESE SIDEBARS

One of FullWrite's best features is its integrated drawing environment. Unlike most word processors, which accept only pasted art, FullWrite lets you create drawings or modify pasted art. The drawing environment is a standard note windoid, but with a palette of tools down the left side. The functions available are much like those of MacDraw, and they even include a simple method for creating Bezier curves.

Sidebars are used in magazines for separate yet related information, sort of articles within articles. FullWrite lets you have sidebars in your documents, with a variety of options. Sidebars can contain pictures, multiple columns of text, and even other sidebars. Sidebars in FullWrite can be placed at a specific place on a page, or they can float with the text that they are attached to. One of the more interesting uses of sidebars is to have the document text wrap around a picture, a feature normally associated with page-layout software. Sidebars can also be used to allow you to have different numbers of text columns on a single

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ColorScript 100. All agree it's a breakthrough. That's not surprising since QMS offers more PostScript products than anyone else.

The ColorScript 100 uses a revolutionary thermal transfer process that produces true 300x300-dpi resolution. That means you can generate thousands of brilliant colors with pinpoint registration that can match the color swatches scattered on this page.

The printer is built around an intelligent controller, running a 68020 processor, equivalent to the one in the Macintosh II. That makes it a powerful computer in its own right. A 16 MHz processing speed makes it responsive. Especially to things like deadlines. You can print an 8½"x11" page in just a single minute. An 11"x17" page in under two.

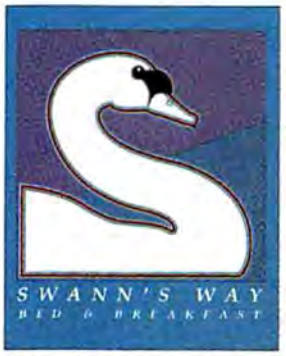
The system's large 8 megabyte memory can handle complex applications. And a 20 megabyte hard disk offers generous space for downloadable typefaces to complement its 35 resident Adobe typefaces.

Compatibility is also built in. The ColorScript 100 connects with Macintosh®, IBM®, Compaq® and other compatible PCs, along with minicomputers, workstations and mainframes.

That means you can work with Aldus FreeHand™, Micrografx Designer™, Quark XPress™, Adobe Illustrator 88™, AutoDesk AutoCAD® and most programs written under Microsoft® Windows. Plus all the new programs that are being developed to join dozens of other color-compatible applications.

The ColorScript 100 is yet another useful solution from QMS. Solutions that have made us a leader in print technology. That's one fact we don't mind giving you in black and white.

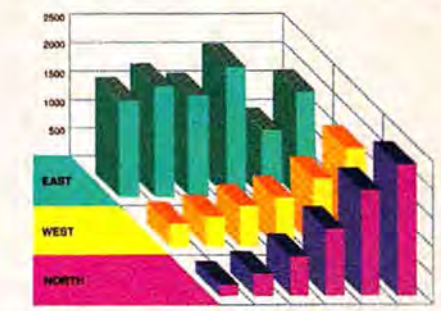
For information on the QMS ColorScript 100, including print samples, a complete list of compatible software and information on financing, call 1-800-631-2692, ext. 203.





Pictured are just some of the ways designers are using the QMS ColorScript 100. The creative director at one design firm notes: "We're doing comps in minutes that used to take hours. The quality is fantastic." A computer design system manager in the Midwest says: "Our clients are getting more options, in less time, at lower costs."





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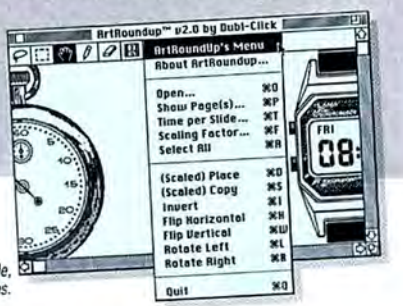
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WetPaint files can be read read by painting programs (like FullPaint™, MacPaint™, SuperPaint™) and applications like PageMaker™. WetPaint is also available in **PictureBase™ format** at an additional $30 per volume.

Even if you don't own a painting program, you can still copy pictures directly from WetPaint files using our **ArtRoundup™** desk accessory—included **Free** with every Wetpaint volume! And ArtRoundup's new **Slideshow** tool is a great way to scan hundreds of images in minutes.



MacUser gave WetPaint 5 mice (Sept. 1987) saying "...the WetPaint art is almost a must for clip art users; the ArtRoundup desk accessory is a neccessity." Volumes marked with ✳ were previously released as "MacMemories."

ArtRoundup comes free with WetPaint, and can Scale, Invert, Flip and Rotate the largest of paint-style images.

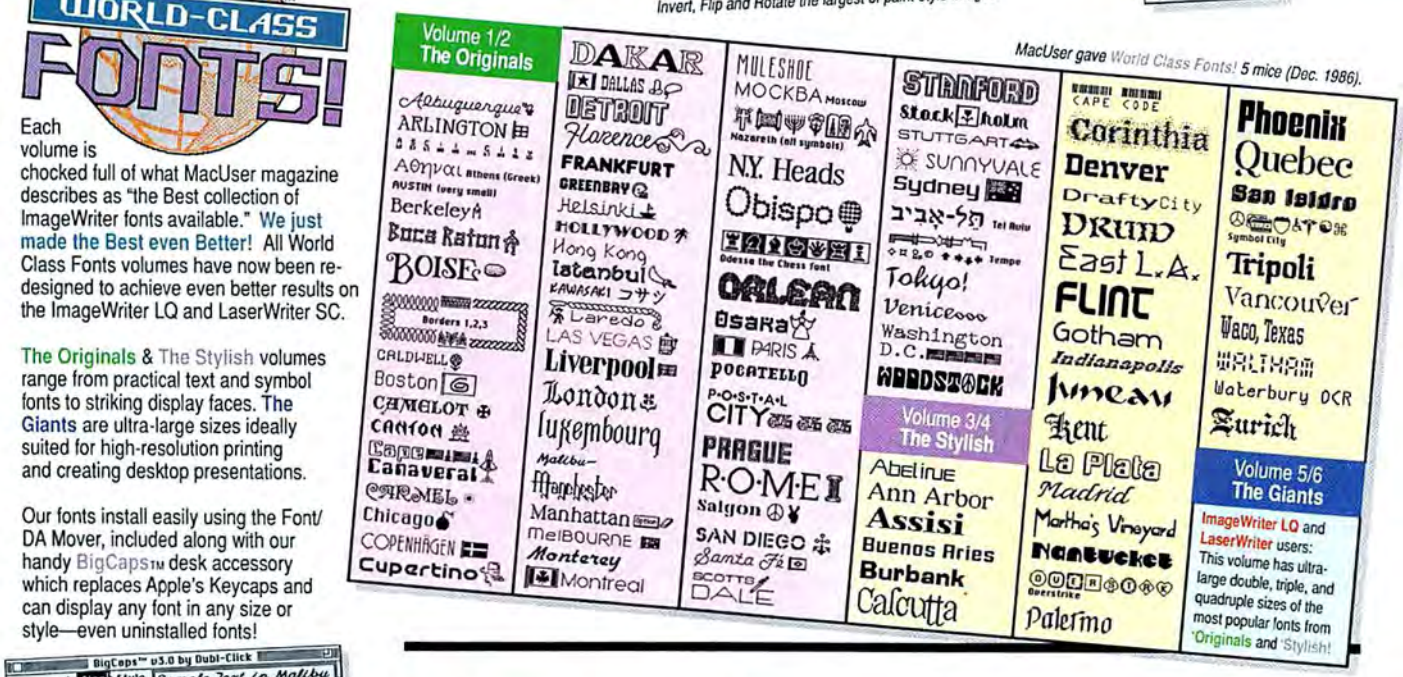
WORLD-CLASS FONTS!™

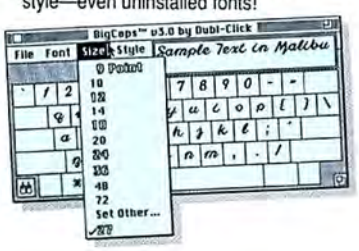
MacUser gave World Class Fonts! 5 mice (Dec. 1986).

Each volume is chocked full of what MacUser magazine describes as "the Best collection of ImageWriter fonts available." We just made the Best even Better! All World Class Fonts volumes have now been redesigned to achieve even better results on the ImageWriter LQ and LaserWriter SC.

The Originals & The Stylish volumes range from practical text and symbol fonts to striking display faces. The Giants are ultra-large sizes ideally suited for high-resolution printing and creating desktop presentations.

Our fonts install easily using the Font/DA Mover, included along with our handy BigCaps™ desk accessory which replaces Apple's Keycaps and can display any font in any size or style—even uninstalled fonts!





Each volume is three 800K disks.
$79.95 suggested retail.

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page. Sidebars are what make FullWrite into a page-layout program.

I LOVE VIEWS

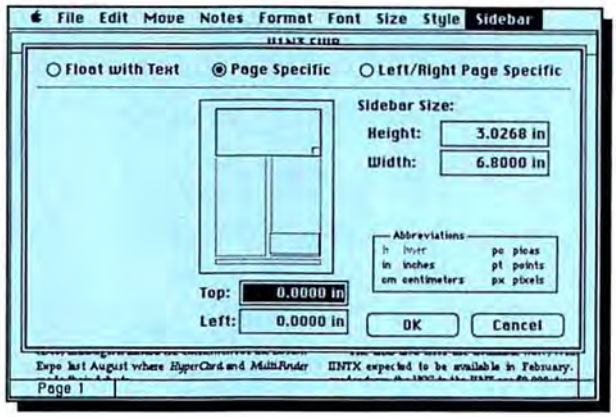
While FullWrite's icon bar helps make it easy to use, it does interfere with the look of the page. So FullWrite offers a choice of page views. The normal mode is with the icon bar, but there is a WYSIWYG view where you see exactly what the page will look like when printed.

There is also a change bar view, where instead of an icon bar down the left side of each column there are change bars along the left side of text that has changed. Change bars are normally black, with gray bars indicating recent changes that can be eliminated by using the Undo command. Change bars can be used to accumulate changes to the document, or you can have them cleared each time you save. You can also manually clear the change bars at any time, or even lock the change bars to make a change without creating a bar. Change bars can be used when several authors are working on a document to highlight what was last done to it, or for documents that are periodically revised to indicate changes since the previous version.

The last view is the outline view. FullWrite includes a complete outlining facility, although this is one of its less intuitive features. If you are familiar with MORE or Acta, you will find the outliner in FullWrite difficult to learn and use. In some respects, FullWrite's outliner is even worse than the one in Microsoft Word, which has also drawn little praise. Once you learn FullWrite's method of outlining, however, the outliner is not difficult to use, and the capability can be very handy.

FONTSTYLES OF THE RICH AND FAMOUS

FullWrite fully supports fonts, allowing any size to be specified from 1 to 127 points. In addition to the standard styles of Bold, Underline, and Italic, FullWrite supports Strikeout, Small Caps, Outline, Shadow, Condensed, Extended, Uppercase, Lowercase, Overbar, Dotted Underline, Double Underline, and Word Under-



Sidebar placement and sizing is done with only a miniature representation of the page for guidance. Precision placement based on visual clues is not possible.



Sidebars and other page-layout capabilities make FullWrite ideal for simple designs like newsletters, catalogs, and menus. But even after hours of work, a sidebar still may not be exactly what you wanted. The gap between the bottom of this sidebar and the two columns of text is as small as it could be made after an hour of adjusting the sidebar's size and placement.

DTP or Not DTP?

FullWrite may blur the line between word processors and page-layout programs, but the line is still there, and FullWrite is still on the word processor side. Yes, it has some features more common to page-layout programs, but a few sessions of attempting precision page layout will convince you that there's still a need for PageMaker and Ready, Set, Go!

What makes FullWrite look like a page-layout program? Many little things. Almost anywhere a dimension can be entered, you have the choice of working in lines, inches, centimeters, points, picas, or pixels. FullWrite allows you to pair-kern. There's a complex and flexible layout dialog where you can adjust margins and specify such things as header and footer heights and column widths. There's the integrated drawing environment.

But sidebars are what bring FullWrite closest to a page-layout program. Without them, it's just another word processor. Sidebars enable you to insert text and pictures wherever you want them. Sidebars also allow text to be wrapped around pictures.

You'll quickly discover, however, that it's nearly impossible to duplicate the precision placement possible with PageMaker or other DTP programs. Sidebar sizing and placement are accomplished in a dialog box, so you can't see the effect on the sidebar or on the page until you're done. You may have to repeat this step several times to get a sidebar exactly the size you want and exactly where you want it. Even after spending a lot of time sizing and placing a sidebar, you may be disappointed with the result.

This first release of FullWrite is a step toward integrating word processing and page layout. A big step, even. But the line remains drawn. FullWrite is not a page-layout program. Not yet, anyway.

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Ease

MacCalc was designed to give every level of user easy access to all of its capabilities, so all of that speed doesn't go to waste while you learn the program — you get flying right from the start. MacWeek *summed it up rather well, "MacCalc answers the frustration of Excel users — MacCalc is exceptionally easy to use."*

Style

With desktop publishing level formatting abilities, MacCalc users produce stunningly professional presentations of their information, and that lets them get the point across not only faster, but better. With unique fonts, sizes, styles, and/or formats for each cell, individually variable row heights as well as column widths, you can highlight important numbers, make titles stand out. . . in other words, make your point.

MacCalc's extensive list of features include: Lotus 1-2-3 file/SYLK data compatibility; cell notes; on-line help; intelligent database functions; keystroke macros (via Apple's MacroMaker); and much more

With MacCalc's list price only $139, Infoworld *concluded that MacCalc is "the clear value leader."* MACazine *stated unequivocably that "MacCalc is the spreadsheet of choice for those who want useful functionality without undue complexity and finally concluded "* *. . . [MacCalc] is a must have."*



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BRAVO

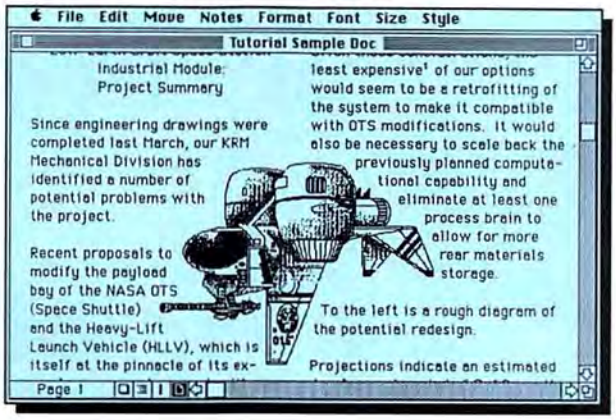
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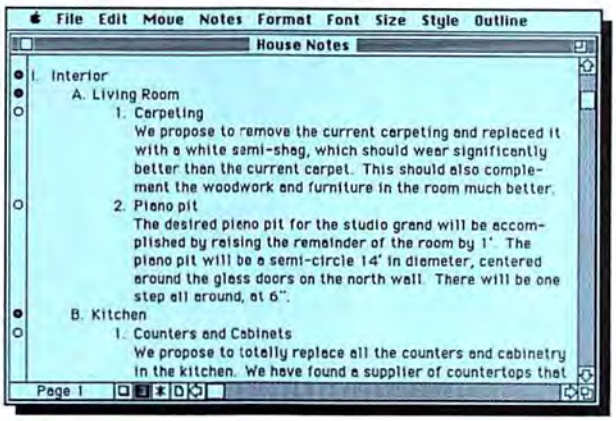
line. You can even specify a percentage gray scale for text. FullWrite not only supports subscripts and superscripts but also allows you to specify the offset from the baseline.

FullWrite has two kinds of style sheets. The first type is called base styles, and comprises the default syles for the document and for the various notes, such as headers, footers, footnotes, posted notes, and so on. Then there are custom styles, which you define yourself and can apply whenever you need them. In both kinds of style sheets, the font size and style can be specified, as can the tab settings. Custom styles offer the additional advantage of being able to specify font size and line spacing as an amount of change from the existing style. Custom styles can also appear in the Style menu, or not, on an individual basis at your option.

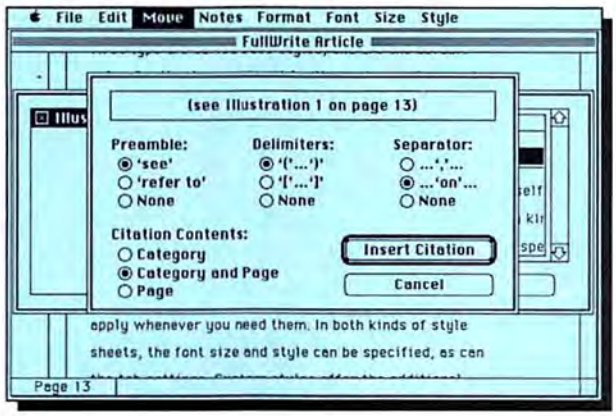
One of the oversights in FullWrite's design is the inability to define styles for the different levels of an outline. To make all level-one headers the same style requires setting each one individually. After setting outline level styles a few times, you might find that Microsoft Word starts looking better.



Through its sidebar facility, FullWrite offers text wrap around irregular pictures, a feature normally associated with high-end page-layout programs.



FullWrite's integrated outliner offers many of the features of dedicated outliners. Outlines can be hidden, so you can rough out an outline for your document that only you will see.



FullWrite's classification and citation capability is extremely powerful yet easy to use. You can create any categories you want and customize each citation.

TO GAIN MEANING

FullWrite includes a thesaurus as well as a spelling checker. The thesaurus is Word Finder from Microlytics, but with a smaller dictionary of synonyms. The spelling checker is acceptable, although the default (the Return key) enters the suspect word in the dictionary. This may be because many words are not in the dictionary. Checking this article, FullWrite found suspect *FullWrite*, *sidebars*, and *endnotes*. It also suggested *Macworld* for *MacWrite* (which it also suggests for *MacWeek*, and *MacUser* isn't in the dictionary, either), although it did suggest another Ashton-Tate product, *MultiMate*, for *MultiFinder*. After filling out the dictionary with any special-purpose words, though, it should prove to be useful.

BEYOND THE FINE PRINT

The whole point of a word processor is getting output, and FullWrite shines at printing, with many options. You can print collated, so that the document prints multiple times. You can print in reverse order, so if you have an older LaserWriter that stacks the last page first the pages come out in order. You can print on both sides, and FullWrite will print the odd-numbered pages and then ask you to set up the paper for it to print the even pages. You can print with line numbers before each line, or with the change bars to the left of the changed text. If you have collapsed outline items, you can specify that they be printed even though they're not visible in the document. If you have a LaserWriter, you



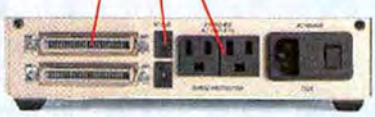
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can print two-up, with two reduced document pages printed side-by-side on each printed page. You can even print registration marks.

One remarkable print feature is the ability to print your document superimposed over a background picture, which can be any Paint or PICT file or, if you have a LaserWriter, an Encapsulated PostScript (EPS) file. The picture can appear behind every page of the document or just the first page (for a letterhead, for example).

FullWrite also has a database merge facility for printing form letters. The database file can be a FullWrite document, a standard ASCII text document, or a dBASE Mac database. You just need to create appropriate variables and place them in the document. FullWrite's database merge is a simple yet comprehensive facility that makes form letters easy to create.

BASES ARE LOADED

FullWrite is so chock-full of features that it's hard to cover them all. The Find and Change functions are very comprehensive; they allow "wild card" specifications and will search and replace on character attributes such as font size or style. There is a "bookmark" facility for noting points in the document for easy navigation.

FullWrite has an amazing classification system that allows you to "classify" a part of the document, then refer to it later with a generated citation like "see Figure 1 on page 10" or "refer to table 3" or even just "page 31." You create your own categories, classify any section of the document as any category, then customize the citation to your liking. Once set up, FullWrite keeps track of all citations and always prints the page numbers correctly.

FullWrite has a Get Info capability that shows character counts, word counts, a readability index, and just about everything you could ever want to know about a document.

FullWrite also will do automatic hyphenation, smart quotes, automatic saves every so many minutes, and even not indent the first paragraph of a chapter (for book authors).

If you like keyboard shortcuts, FullWrite may be for you. Most menu items have keyboard equivalents, but FullWrite has a feature called WalkDown menus that makes almost all menu items, even fonts, accessible from the keyboard. The menus are numbered from left to right, so that pressing Command-2 will select the Edit menu. The selected menu drops down and the menu items are numbered with Command-key equivalents, and pressing Command-number will select the specified menu item, or you can use Command-period to dismiss the menu. On the Font menu, only the first 12 items are selectable (1 to 9, 0, ´, and =).



FullWrite keeps detailed information about each document besides just character count and word count. It even calculates the readability index on the Lix scale, where the number indicates the grade level.



FullWrite's WalkDown menus make almost every menu item, even those without key equivalents, accessible from the keyboard.

> The more memory you have, the better FullWrite likes it.

THANKS FOR YOUR SUPPORT

Bartles and Jaymes should be so lucky to have such great support. Ashton-Tate deserves accolades for the warranty on FullWrite Professional. Unlike most software companies who just warrant the physical disks, Ashton-Tate warrants the software for 90 days to perform as advertised. If it doesn't, and they can't fix it, they'll refund your money.

Ashton-Tate also provides 90 days of telephone support, but only after you return the registration card. They do allow one call before this, but you should get the card in the mail as soon as you can.

THREE STRIKES, BUT NOT OUT

Although it is a great, complete document-processing and page-layout program, FullWrite does have its shortcomings.

Strike one: performance. FullWrite is a BIG program, and it just loves memory. The more memory you have, the better it likes it. Unfortunately, the

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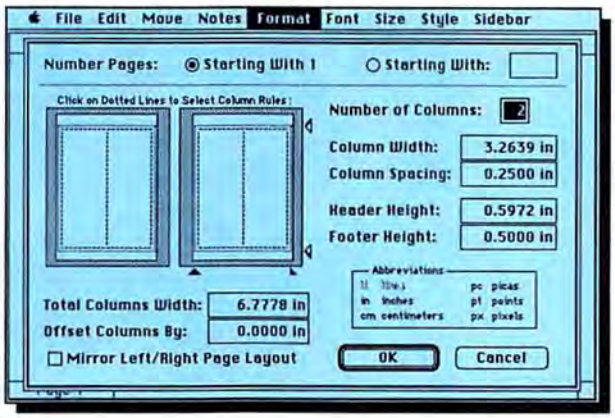
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"standard" Macintosh memory size these days is only 1 megabyte, and that's just barely enough for FullWrite. If you have a lot of add-on programs like Suitcase and QuicKeys that use memory, you may find FullWrite doesn't have enough memory to do everything you want (like open documents). With only a single megabyte, chapter sizes are limited as well. It's even possible to create a document with FullWrite on a multimegabyte machine that can't be opened on a standard Plus or SE, although there is an option to have FullWrite enforce a 1-megabyte limit on your documents so that they can be opened on any Mac. FullWrite also requires at least 1 megabyte when used with MultiFinder, so you can forget about multitasking unless you have at least 2 megabytes of memory.

Then there's speed. A program the size of FullWrite does a lot of computing and can take a while to get some things done. On a Mac II or accelerated Plus or SE, FullWrite's performance is good even if a bit sluggish at times. On a regular Mac Plus or SE, FullWrite isn't as zippy, but for most simple operations its performance is certainly acceptable. And again, memory helps: the more you have, the better FullWrite performs.

Strike two: file sharing. FullWrite can read Word files (1.05 and 3.0 formats), MacWrite files (all formats), MultiMate files, and ASCII text files. That's the good news. The bad news is that FullWrite can only write to MacWrite 4.5 format and ASCII text files. So when it comes time to export, your choices are very limited. The manual arrogantly states that because FullWrite is so powerful, you won't need to export to any other program. In some cases that may be true, but since no other program can yet read FullWrite-format files, this becomes a major limitation that effectively locks you into FullWrite.

Strike three: documentation. FullWrite is a complicated program with a lot of features, so it is understandable, if unfortunate, that the manuals aren't easy to use. FullWrite comes with a *Learning Guide*, a *Reference Guide*, and a *Keyboard Shortcuts Reference Card*. The *Learning Guide* is as thick as the *Reference Guide*, and many subjects are covered in both although some subjects are barely covered in either. Locating topics through the index is not always simple.



The Layout dialog allows you to define most page characteristics. Notice the list of abbreviations in the lower-right corner. The current setting of inches comes from the document setup, but any unit of measure can be used at any time.

So should you buy FullWrite? Absolutely, if you have a Mac II or even a Plus or SE with more than 1 megabyte.

A LOOK AT THE BOX SCORE

FullWrite is like the batter with a full count. It's what happens next that's important. It's loaded with features, and has the potential to hit a home run and score big money for Ashton-Tate. But it also has a few strikes against it, with high memory requirements and lackluster performance, so the next swing could put it out. The team leading the division, Microsoft, has a heavy hitter getting warmed up in Word 4.0.

So should you buy FullWrite? Absolutely, if you have a Mac II or even a Plus or SE with more than 1 megabyte. Definitely, if you need the myriad features it offers and can live with its few limitations. Or if you want a word processing program with some of the bells and whistles of desktop publishing. And with its full warranty, if you run into any serious problems Ashton-Tate will fix it or give you your money back, so some of the risk is taken out of the decision.

FullWrite is an absolutely amazing word processor. While it could be even better, remember that this is version 1.0, and with Macintosh software that's usually just the beginning. FullWrite has a future.

ROBERT R. WIGGINS IS MACUSER'S CONTRIBUTING BUSINESS EDITOR.

MACUSER RATING

FullWrite Professional

★★★★½

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ □ □
On-Screen Help	■ ■ ■ □ □
Performance	■ ■ ■ □ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ ■ ■

Comments: High-end word processor with page-layout capabilities and a comprehensive feature list. **Best Feature:** Classification and citation facility for references. **Worst Feature:** Large memory requirements and sometimes sluggish performance.

List Price: $395. Published by Ashton-Tate, 20101 Hamilton Avenue, Torrance, CA 90502-1319; (213) 329-8000. Requires 1 megabyte of memory. Not copy protected.

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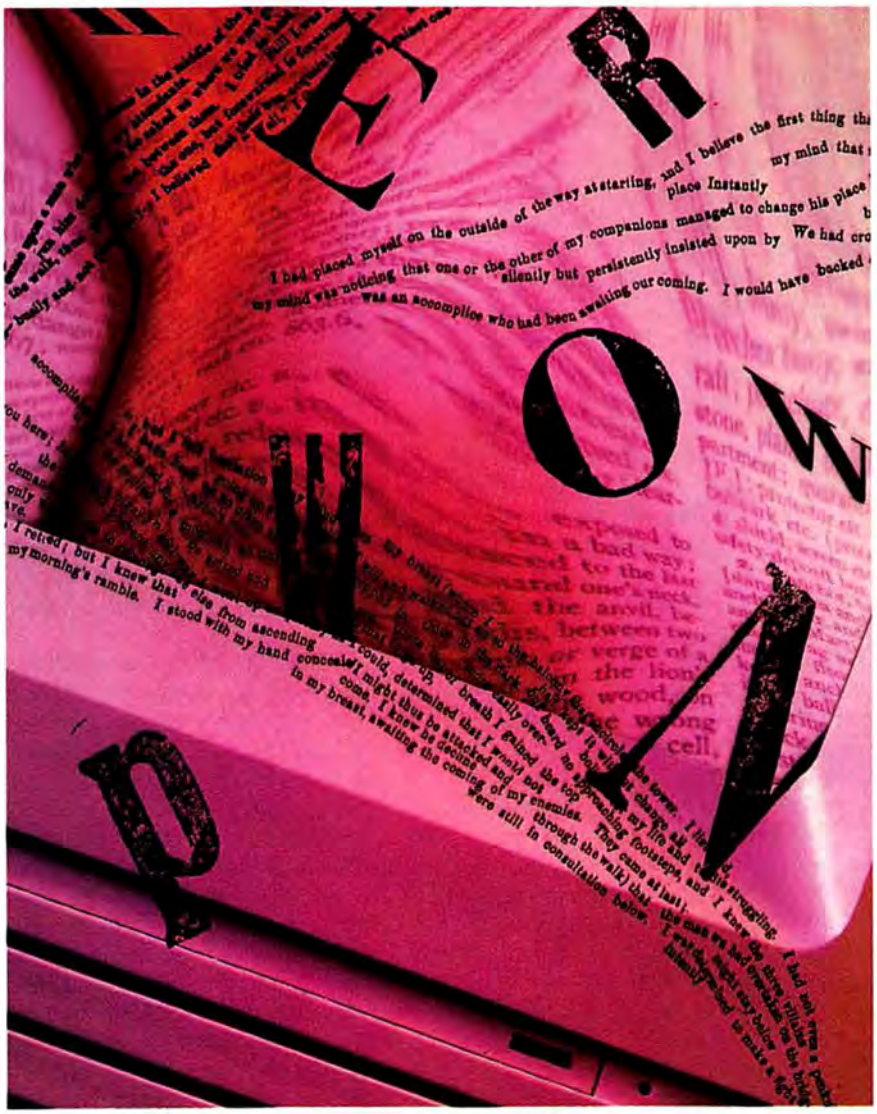
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The Elements of Style

Style sheets are the one-step approach to complex typesetting in Word and PageMaker.



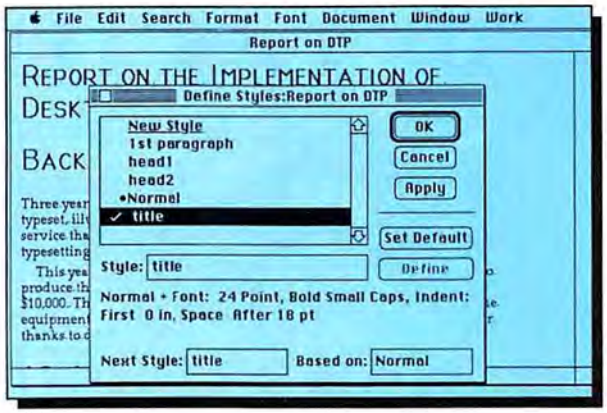
BY DIANE BURNS AND S. VENIT

Microcomputers made the leap from being mere word processors to desktop publishing systems when they began to set type in a variety of fonts and formats. Traditional typesetters defined a page by inserting cryptic codes, like <pt10> (for specifying 10 point type) — not a bad system if you had already memorized the catalogue of possibilities. The Macintosh revolutionized typesetting by showing the actual fonts on-screen and letting you change styles with a menu choice. As fast and simple as menus are, the next step in ease of use is style sheets, such as those offered in Microsoft Word and now in PageMaker 3.0.

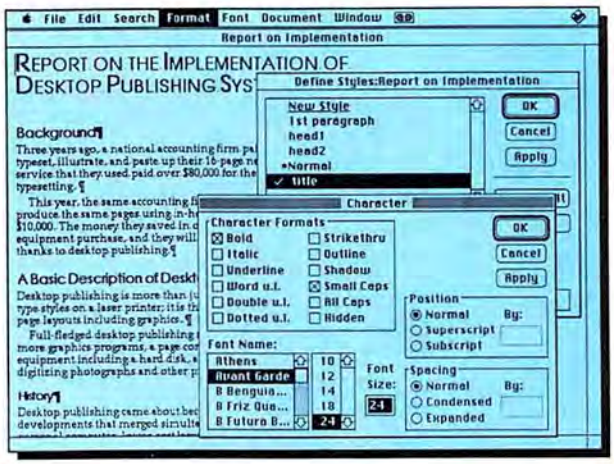
Style sheets simplify the process by letting you make one choice for the look of a block of text. A style sheet groups the typeface, size, style, column width, leading, and alignment commands and "tags" them with an appropriate descriptive name. For instance, the tag "headlines" might represent a 24-point bold Chicago font on a 36 leading that is centered on the page, while the tag "manuscript" describes a 10-point Helvetica font that is justified in a column 12 picas wide. You select a block of text and assign a tag, and what previously took four or five steps to accomplish is down to one.

Many programs have made use of style sheets for years. Microsoft Word, on both the Macintosh and the IBM, has a powerful style sheet feature. The

style sheet capability in Ventura Publisher for IBM PCs made it the publishing package of choice for many people who might have purchased Macs instead. By including style sheets in PageMaker 3.0, Aldus has responded directly to the market's demands.



The Define Styles dialog box in Microsoft Word 3.02 displays a list of styles, all of which are "based on" the default style, Normal.



With Word's Define Styles dialog box open, you can use the Character Format and Paragraph Format commands and the Ruler line to define the specifications of a style.

YOU GOTTA HAVE STYLE

Style sheets increase productivity significantly, especially if you are creating long documents or a periodical with the same design in each issue. You can streamline page production for documents that may range in size from a four-page newsletter to technical documentation of several hundred pages in length. By using a style sheet, you go through the full set of menu selections — to format font, size, paragraph indents, and so on — for a particular text element only once, when you define the style. Thereafter, you use only one command to format individual paragraphs — the command that applies the style.

In addition to saving time, style sheets also help ensure consistency in formatting — an otherwise elusive target in desktop-published documents. Think of style sheets as a "filter" for design. The typesetters need know only how to distinguish text elements based on descriptive tags like "Body Text" and "caption," while the application applies the specific details of the design. Proofreaders can be more concerned with questions like, "Is this particular line supposed to be a Level 1 or Level 2 heading?" rather than using rulers and type gauges to verify that the specs were uniformly applied.

You can also use the same style sheet for different issues of a publication. Once you have set up a style sheet for a newsletter, for instance, you can apply it to all subsequent editions simply by loading that style into each new issue's file — you need not recreate the style sheet for each document. It makes being accurate between issues — or between chapters of a book — much easier.

Another tremendous advantage of using style sheets is that you can globally change the specifications throughout a document. What this means is that the style sheet "filter" over your designs is completely malleable. How many times have you thought that those subheads were just a little bit too large in comparison with the body copy? Or you wondered what the subheads would look like if they were italicized?

If you decide that the subheads should be set in italics rather than bold, you can simply change the style of the subhead tag, and all subheads throughout the document will automatically change to reflect the new specs. You can also make copy-fitting adjustments by modifying the space above and below headings or by globally changing the leading of body text.

For more sweeping changes, you can load a new style sheet that uses different specs but shares the same tag names, and the entire document will change to match the new style sheet's specifications. By taking the time to format all your publications with style sheets, you can fine-tune your layout very easily, even after the pages have been composed.

These capabilities make style sheets a valuable design aid as well as the ultimate in final control. If the text is formatted with the appropriate tags, the latest style sheet can be activated at any point during the production process to apply the final design plan.

DEFINING A NEW STYLE

The style sheets in PageMaker 3.0 are similar to those in Word 3.0, though the interface has been slightly modified. Neither application requires you to use the style sheet feature — you can always format text entirely with menu commands.

The basic steps to creating and using style sheets are the same in all applications: First, define each style or tag by giving it a name and assigning character and paragraph specifications to it; then apply the styles to text as needed. You don't need to define the full list of tags before you start — you can add or

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edit the styles as you go through the text.

You define styles in Word by selecting the Define Styles command from the Format menu. A dialog box appears from which you control all the functions related to defining and editing styles. In Word's Define Styles dialog box, first type a new style name or select an existing style to edit, then use the Character Format and Paragraph Format commands, the Ruler line, and the Font and Format menus as you normally would.

To define a style in PageMaker, use the Define Styles command from the Type menu. To define a new style, click on the New button, which causes the Edit Styles dialog box to appear. Then, click on the button that takes you to the appropriate dialog box — either for Type specifications, Paragraph format, Tab settings, or Color definition. As you choose these various commands, they become part of the style definition.

In both Word and PageMaker, you can also define a style by first selecting some of the text in your file, formatting it as desired, then selecting the Define Styles command. By typing in a style name and clicking the Define button, that style takes on the format of the selected text.

The best way to create a style sheet is to define the style called "Normal" in Word or "Body Text" in PageMaker. This definition determines the format of all the text in your file that does not have some other specific style. So, once you define the font, style, and paragraph attributes desired for the bulk of your document, you have to define only variances from the main copy — such as the first-level heads or subheads. Both Word and PageMaker associate styles with a "based on" option. For example, the style for an indented list might be based on Normal style — having all the same characteristics as Normal text but set with a hanging indent. If you change the font used in Normal style, the font automatically changes in indented lists, but the different indentations remain. Similarly, all subhead styles might be based on Heading 1 style.

Word's Next Style option is another productivity aid. It sets up a change of style whenever you press the Return key. For example, if a subhead is always followed by body text, you can set up Body Text as the Next Style for the Subhead tag. Then, whenever you type a subhead followed by a carriage return, you return to Body Text style.

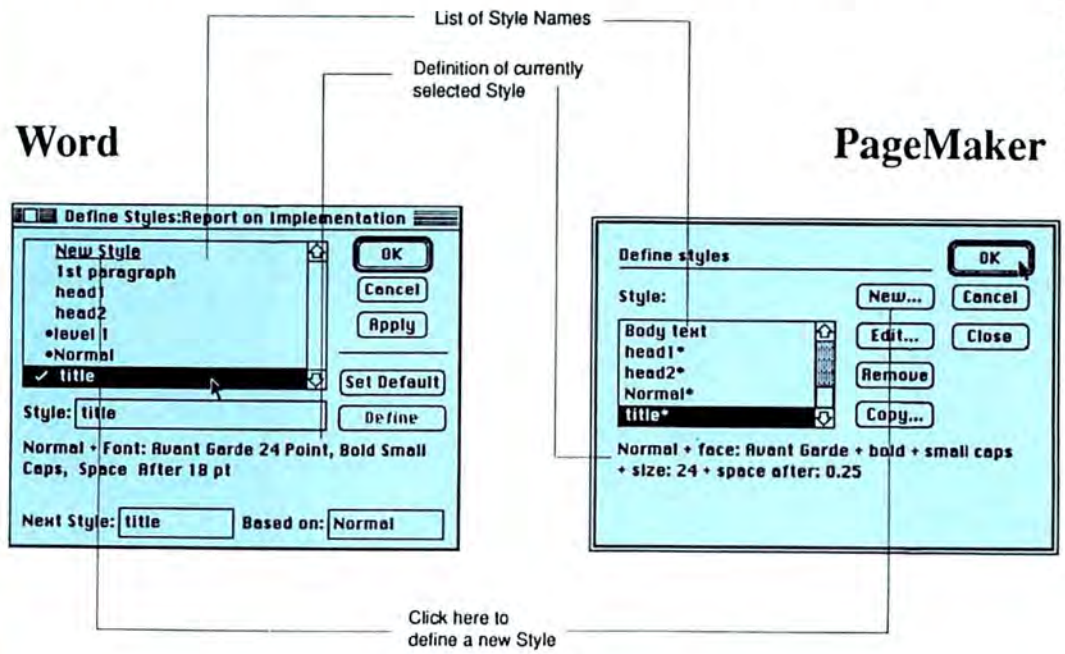
Once you have defined all the necessary styles, you can print a copy of Word style sheets, listing all the style names and their definitions. By printing this list, you can check the accuracy of all style definitions. Unfortunately, PageMaker 3.0 doesn't let you print out the style sheet list.

APPLYING STYLES

Once you define a style, you may apply it to selected text in Word or PageMaker by using the Styles command and then choosing the style name from a list. In Word, the list of styles is displayed in a scrolling window that is accessed through a dialog box. In PageMaker, a hierarchical menu pops out to the side to select the style name you need.

Both Word and PageMaker offer short cuts. The fastest method is the keyboard-command sequence offered by Word: Select the text, hit Command-S, type in the name of the style, and press Return. You need not type in the entire style name; only the first unique characters will suffice. For example, in our sample style sheet, only "title" begins with a T; thus, we can simply enter the key sequence Command-S, followed by T, then Return to apply the style to any selected text.

In Word, you can also define the name of a style followed by a comma and a number or letter; then after typ-



The similarities between the Define Styles dialog boxes in Word and PageMaker make it easy for them to share style sheets.

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ing Command-S you need enter only the single digit that follows the comma in the name of the style. For example, the style "Header 1,1" could be applied by simply typing in the number "1" as the style name. This makes applying styles very fast and offers the advantage of printing meaningful style names, as well as the ability to transfer them to PageMaker 3.0.

PageMaker offers no keyboard short cuts for applying styles, but you can open the Style Palette, which displays a list of all the defined styles. Text is automatically formatted when you select it and click on the appropriate name in the list of styles. The Style Palette is a window that can remain displayed on the screen, like the Toolbox window, while you work.

If you're using both Word and PageMaker, you might decide to do all style sheet specifications in Word using the keyboard short cuts. Once you have formatted a Microsoft Word file using style sheets, you can place the file into PageMaker 2.0 or 3.0 without losing the formatting. In PageMaker 3.0, the style sheet is carried over with the specifications as set in Word, or you can use the style sheet in PageMaker to override specifications from Word. (In PageMaker 2.0, however, you have no further control and cannot edit the style sheets, since this version does not support them.)

When you place a Word document into PageMaker, style names that are part of the Word document but not already part of the PageMaker document are added to the PageMaker list with an asterisk next to them. Also, all of the formatting defined in Word is transferred to the PageMaker style sheet for the new styles. Styles from Word that share the same names as styles already set up in PageMaker take on the specifications defined in PageMaker, overriding the specs defined in Word for the same styles. Text can also be exported from PageMaker 3.0 into Word style-sheet format.

CHANGING A STYLE

One of the greatest advantages of style sheets is the ability they give you to change your mind about the specifications of various elements in your document. By simply redefining the style, all text marked with that style is automatically reformatted. The process resembles a global search-and-replace for formatting.

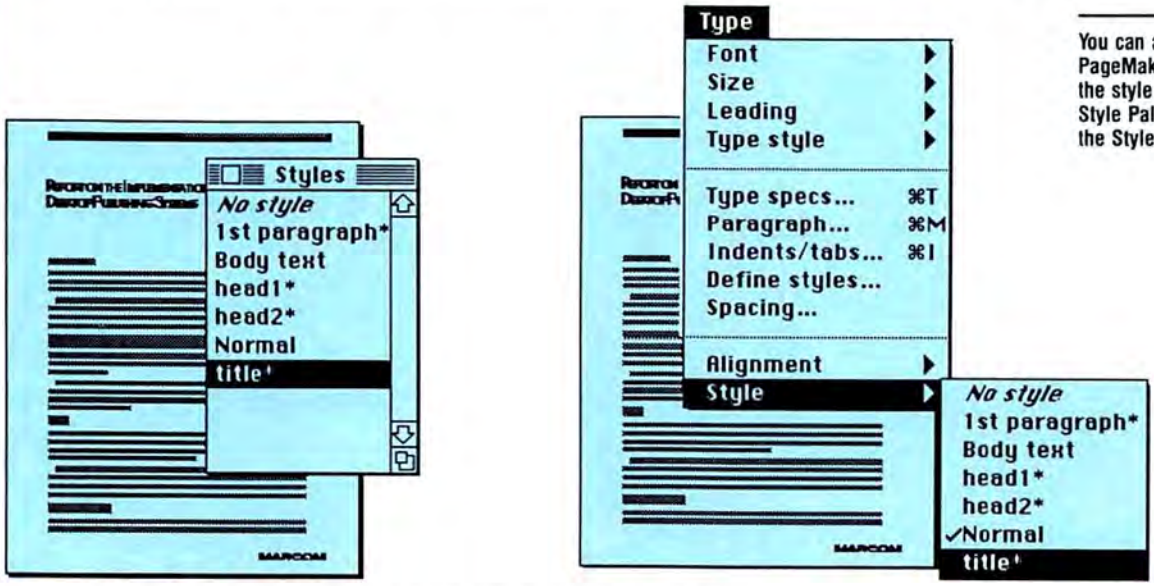
You edit styles in Word by opening the Define Styles dialog box, selecting the style name, and choosing the new formats desired from the various menus. Click the Apply button to view the effects of the change on selected text before you activate the changed specs, or click Define to change the style throughout the document. When a change is made in the definition of a style, all text formatted with that style automatically changes to the newly defined format.

To edit a style in PageMaker 3.0, choose Define Styles from the Type menu. When the dialog box appears, click on the name of the style you wish to change from the list, and then click on the Edit button or double-click on the Style name. Next, when the Edit Styles dialog box appears, click the button for the format you wish to change.

Let's say, for example, that you wanted to change the type specs for the subheads. After double-clicking on the style name in the Define Styles dialog box, you click on the Type button in the Edit Styles dialog box, make the necessary changes in the Type Specification dialog, then click OK in each dialog box. When you finally close the Define Styles dialog box, all the subheads in the file will be automatically reformatted.

The Style Palette in PageMaker allows you to get to the Edit Styles dialog box quickly without having to go into the Define Styles dialog box first. Hold down the Command key, then click on the style name on the palette that you wish to edit. When the Edit Styles dialog box appears, follow the same steps outlined above to change the definition of the style.

You can also load a style sheet from one document into another. In Word, select Define Styles, then choose Open



You can apply styles in PageMaker by clicking on the style name in the Style Palette or by using the Styles menu.

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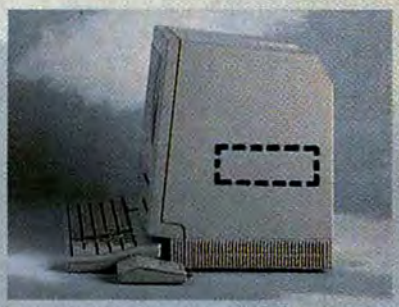
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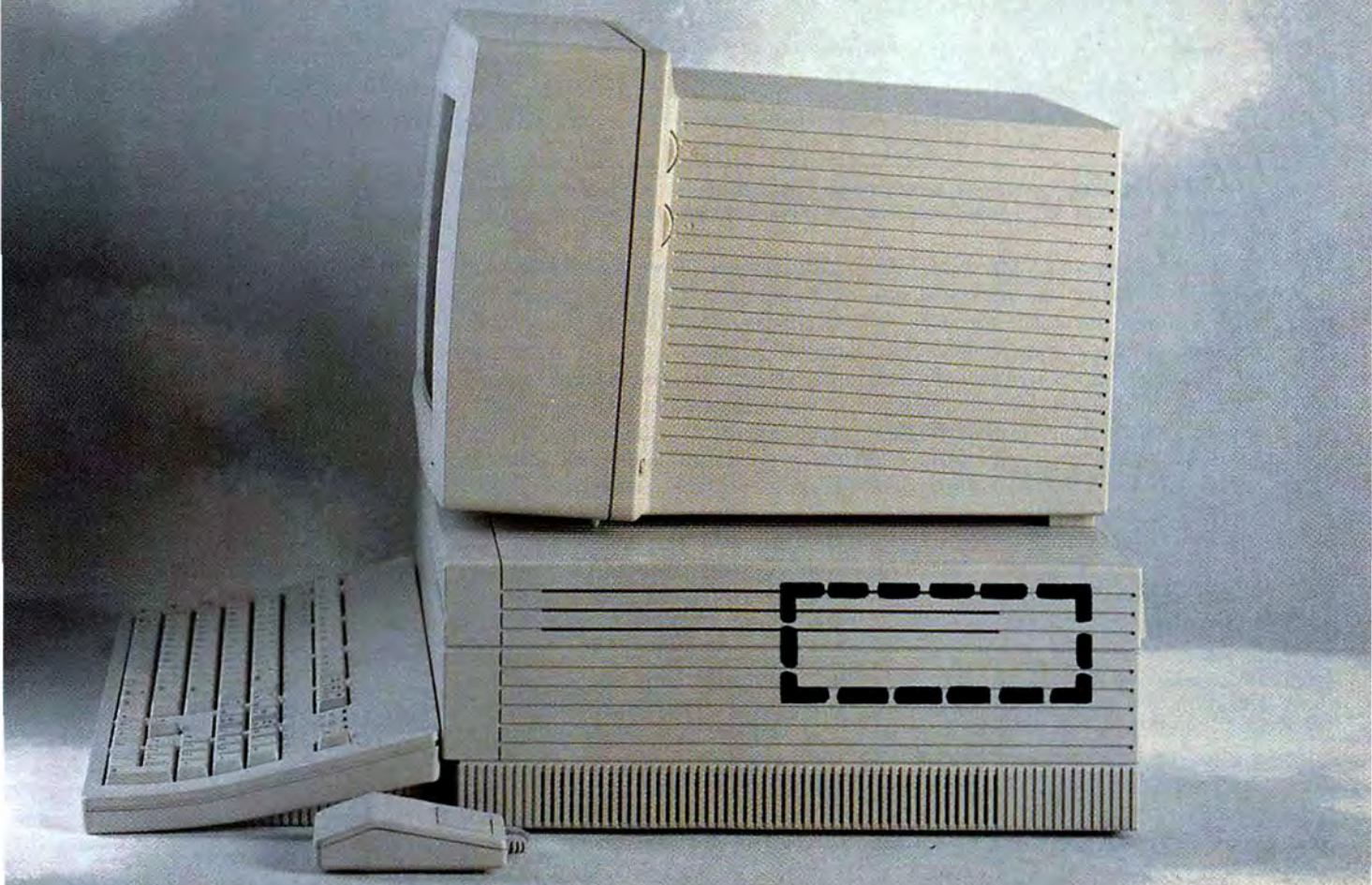
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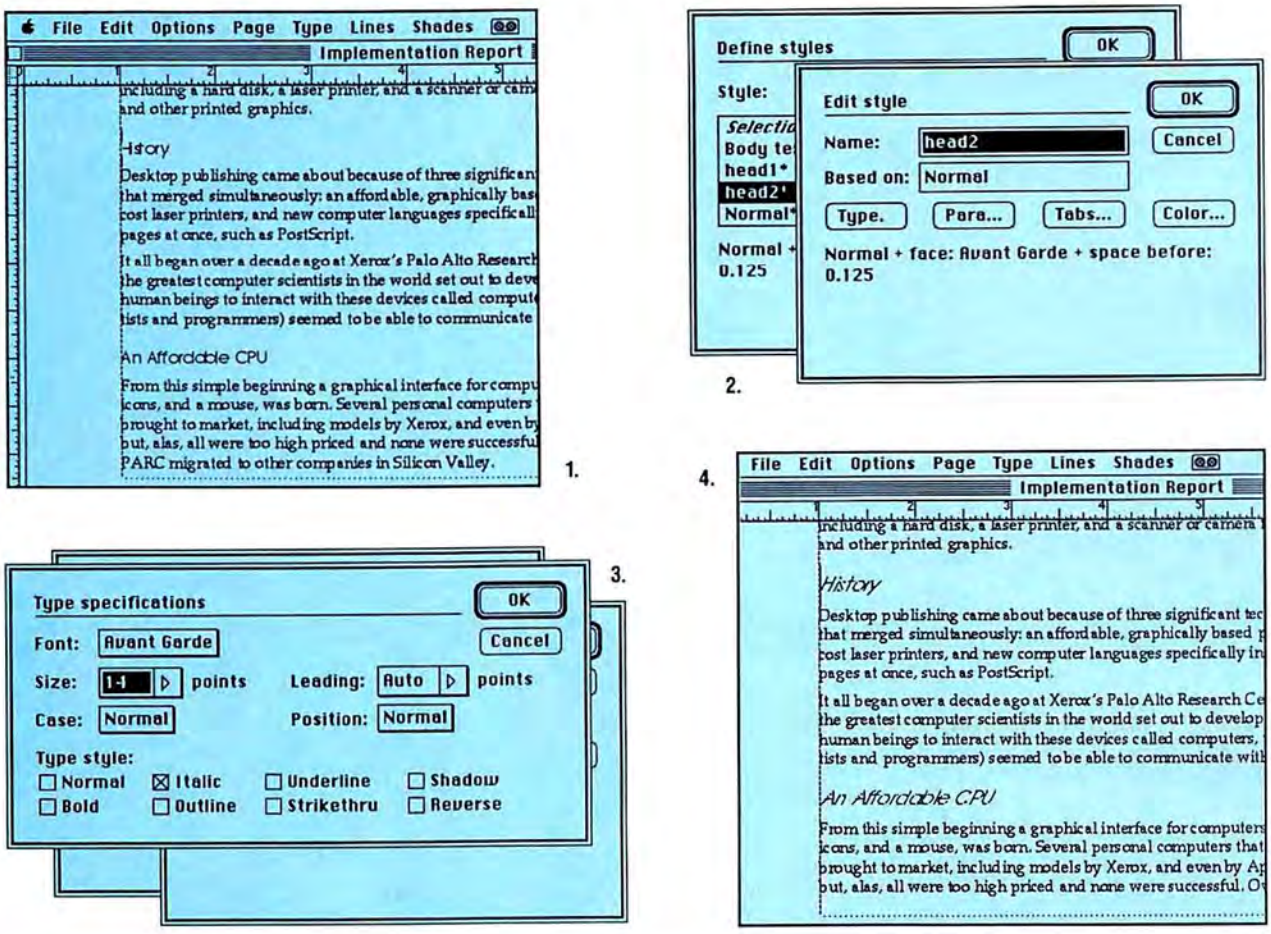
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The Elements of Style



Level 2 headlines (head2 style) appear in 12-point Avant Garde before the style definition is changed.[1] The head2 style of PageMaker 3.0's Edit Style dialog box is selected.[2] After the style sheet definition of head2 has been changed to 14-point Avant Garde italic[3], all the occurrences of head2 text are changed also.[4]

from the File menu — the style sheet will be copied into the current document from the document you select in the dialog box. In PageMaker, open the Define Styles dialog box and click the Copy button. Another dialog box appears, with a list of all PageMaker 3.0 files. When you select the file name, only the style sheet from that file will be copied into the currently open file.

OVERRIDING STYLES

Since style sheets affect text on a paragraph-wide level, what do you do about words that are italicized for emphasis or that have to be in a different font? Both Word and PageMaker allow for format exceptions, though the two programs vary slightly in their approach.

Let's say that you have a document formatted in 12-point Times Roman, but there are a few paragraphs that require certain words to be set in 11-point Helvetica Bold. In Word, you may designate a single word or group of words in 11-point Helvetica Bold by selecting the text and then choosing the appropriate commands from the Format and Font menus.

Now, suppose a decision is made to change the definition of Body Text from 12-point Times to 12-point New Century. In Word and PageMaker, you simply change the definition of Normal style, and all of the body text will change to New Century without changing the 11-point Helvetica Bold.

If you apply styles to paragraphs with style overrides in them in Word, the overrides hold. In PageMaker, however, the different font changes to the font of the style definition unless you hold down the Shift key while clicking on the style name in the Style Palette. Holding down the Shift key prevents the style definition from overriding the type in a different font. To strip out the overrides in either application, choose Plain text from the menu or type Command-Shift-Space.

The addition of style sheets to PageMaker 3.0 is a welcome one. Style sheets are a real must for serious desktop publishing production. If you haven't been using them in the past, now is the time to begin. Be a power-user.

DIANE BURNS AND S. VENIT ARE FOUNDERS OF TECH ART, INC., A DESKTOP PUBLISHING DESIGN AND PRODUCTION FIRM LOCATED IN SAN FRANCISCO. THEY ARE THE AUTHORS OF SEVERAL BOOKS ON DESKTOP PUBLISHING.

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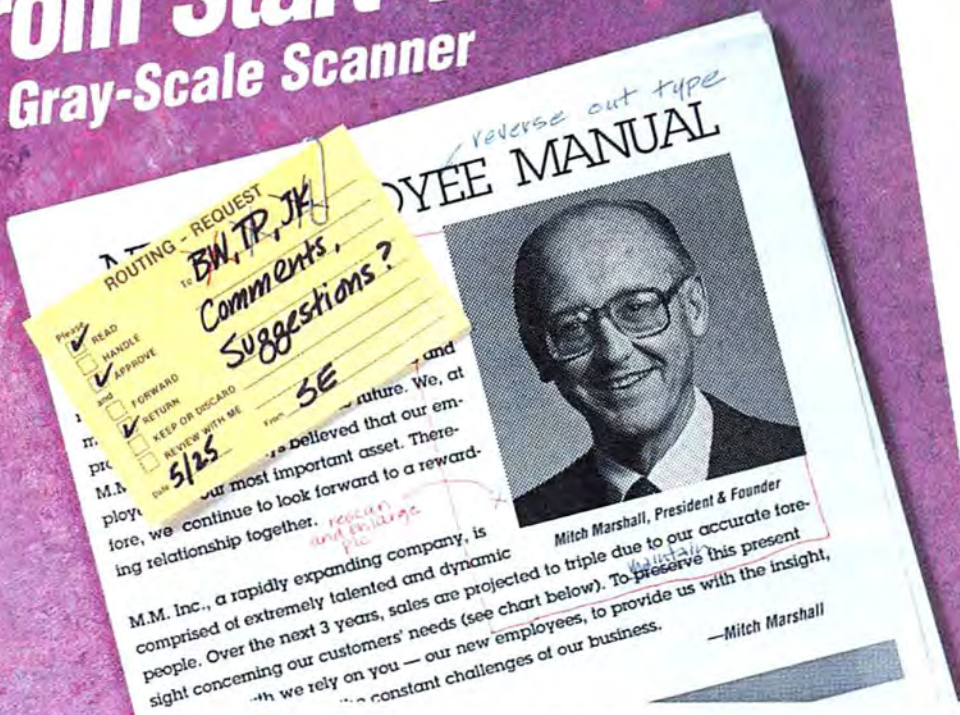


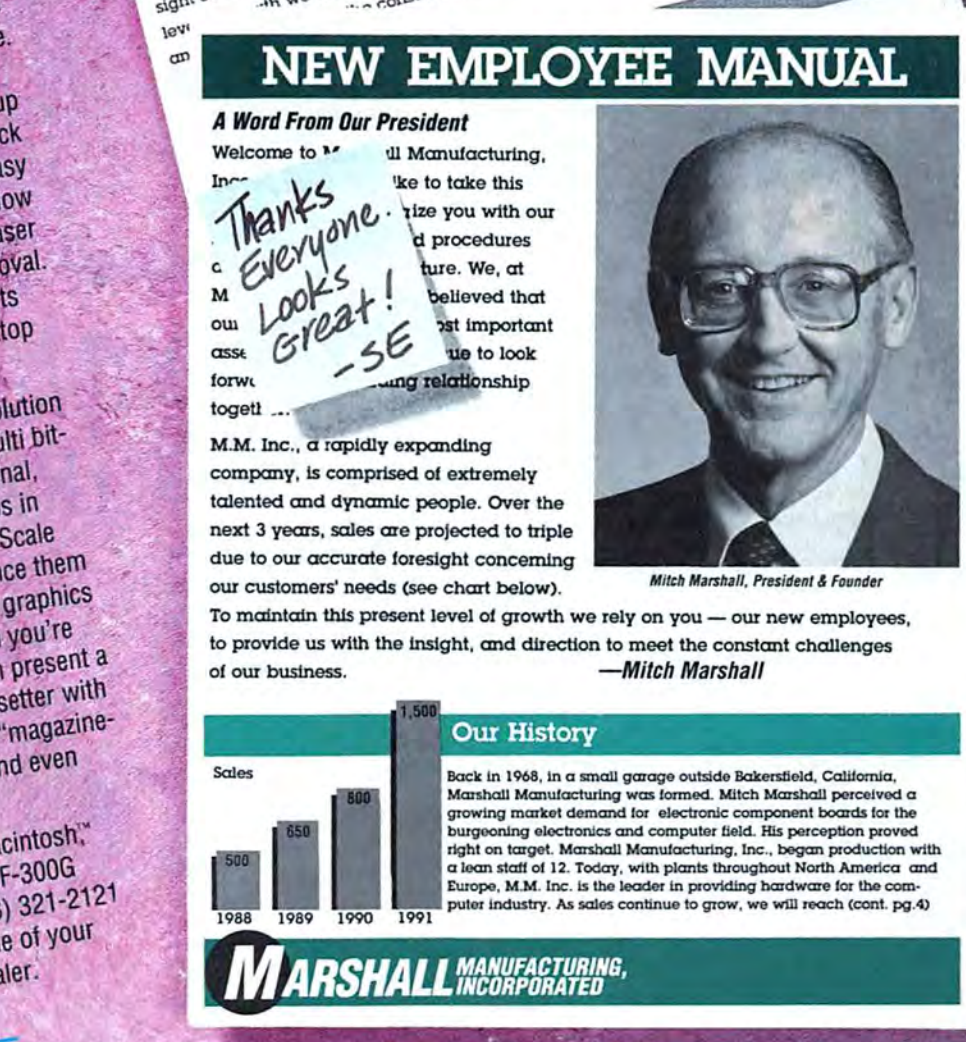
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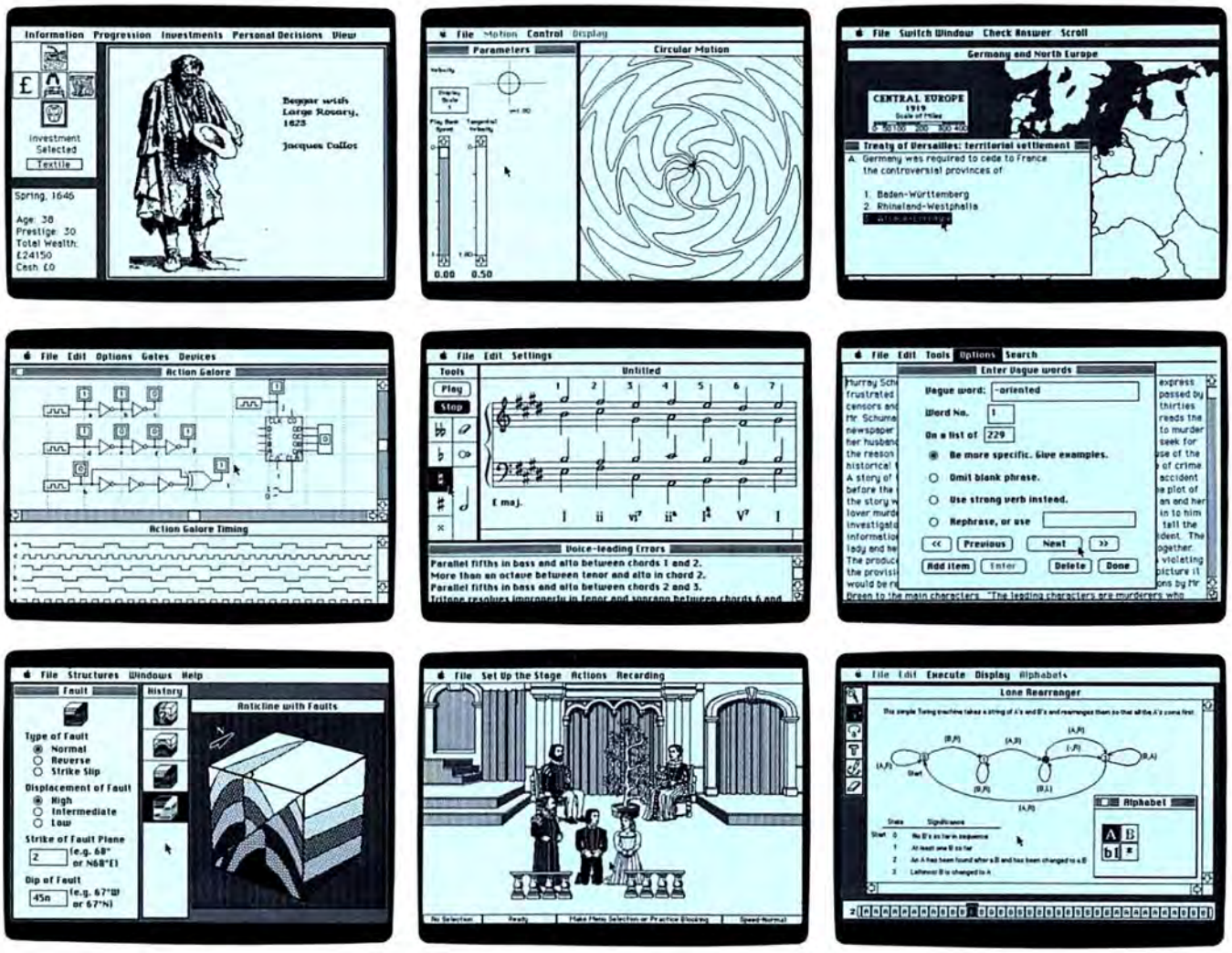


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Character Analysis

Is a word worth a thousand pixels? In optical character recognition, the answer is yes — if you don't mind that it's misspelled.



BY BEN TEMPLIN

Morris Q. writes law books on a typewriter. He's done it that way for 30 years and wouldn't switch to a word processor any sooner than he would trade his bow tie for the latest in splashy Italian silk. It's Morris's publisher who's left to hire typists to input the text in the computer and proofreaders to make sure the manuscript is typed correctly.

Such work is common even in the age of desktop publishing, when the distinction between writer, typesetter, and publisher is increasingly blurred. But using typists to rekey information is, in management parlance, labor-intensive. A more elegant solution is optical character recognition (OCR).

WORD PICTURES

OCR is like printing in reverse. You start with hard copy and end up with an electronic file. Unfortunately, the middle steps aren't quite as easy as choosing a document and clicking a command. The average system digitizes a page into the computer's memory by using a scanner. The scanner acts like a camera to create a picture of the text. OCR software then looks at each image of each letter and matches it to an ASCII text character. In other

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Image captured with NuView. 8-bit mode, 256 colors. Charts created with Ready-Set-Show.

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words, it turns the picture of a word into an actual word that can be read into a database, spreadsheet, or word processor.

OCR isn't a radically new technology. The idea has been around ever since someone asked who would be the unlucky stiff to type all the company files into the computer. However, OCR has been slow to arrive to the Macintosh because of poor results during early tests. OCR often falls short of the mark when trying to recognize letters that look similar. For instance, the letter *i* is often mistaken for *1*, or the letter *c* for *e*. Some of the lower-end packages are little better than a 35-word-per-minute typist who can't spell. However, the past year has seen technical enhancements, more product introductions, and a corresponding drop in cost.

The software reviewed here varies considerably in price and performance. Some are packages that come bundled with a scanner. Others are programs that hardware manufacturers offer their customers at an additional charge. Still others come from software companies and work with a variety of scanners. What they have in common is what they won't accomplish. With the exception of ReadStar II Plus, none of these programs satisfactorily reads typeset text. You won't be able to convert a published book or magazine article into a word-processing document. But all of them can handle text typed on a typewriter, and some work with dot-matrix or laser printer output as well.

OCR doesn't work well with typeset material because the hardware can't provide an image with enough resolution for the software to isolate each letter from the one next to it. Most Macintosh scanners digitize images at 300 dots per inch (dpi). While this is more than enough information for the human eye, the computer can't always discern the subtle nuances between letters with such little information.

Some of the software packages compensate for hardware shortcomings with options that enhance the resolution. For instance, brightness and contrast controls adjust for poor quality that's a result of colored paper, third- or fourth-generation copies, or light printing.

Another option is to filter out stray marks on the page. Even one pixel's worth of dirt above the letter *o*, for example, might be interpreted as an ascender and cause the program to misread the character as a *b*. To avoid confusion, some programs have an automatic filter that removes foreign accent marks. Other programs require

FEATURES	MacInText	ReadStar II Plus	TextScan	Read-It! #	Publish Pac
Typewriter Fonts *					
Artesian	yes	N/A	N/A	no	no
Bookface Academic	yes	N/A	N/A	no	no
Bold	no	N/A	N/A	no	yes
Courier	yes	N/A	N/A	yes	yes
Elite	yes	N/A	N/A	yes	yes
Gothic	yes	N/A	N/A	no	no
Letter Gothic	yes	N/A	N/A	yes	yes
Madeleine	no	N/A	N/A	no	yes
OCR-B	no	N/A	N/A	yes	yes
Pica	yes	N/A	N/A	no	yes
Prestige Pica	yes	N/A	N/A	yes	yes
Prestige Elite	yes	N/A	N/A	yes	yes
Title	no	N/A	N/A	no	yes
Victoria	yes	N/A	N/A	no	no
Learning Mode	no	yes	yes	yes	no
Scanners (Direct Control)	Microtek	Microtek, Canon	Canon	Microtek, Canon (MacScan)	DEST
Pre-Scan Control					
Brightness	yes	yes	yes	yes	no
Contrast	yes	yes	no	yes	no
Define Page	yes	yes	no	yes	no
Mask Out Graphics	yes	no	no	no	no
Define OCR Areas	yes	no	no	no	no
Filter Dirt	yes	no	no	yes	no
Post-Scan Control					
Define OCR Areas	yes	yes	yes	yes	yes
Eraser Tool	no	yes	no	no	no
Saves Text In					
Text	yes	yes	yes	yes	yes
MacWrite	no	no	no	no	yes
Word 3.0	no	no	no	no	yes
Formatting					
Indents	yes	no	no	yes	yes
Insert Tabs For Space	no	no	no	no	yes
Text Flows/Line for Line	Line for Line	Text Flows	Line for Line	Line for Line	Text Flows
Compensates for Hyphenated Words at End of Line	no	yes	yes	no	yes
Editing Within OCR Program	yes	no	yes	yes	no
Statistics	no	yes	no	yes	no

*Font styles may vary between makes of typewriters.
#Also supports several brands of typewriters.

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that you use an eraser tool and clean up the accents and dirt yourself before sending the page through the OCR process.

COMPATIBLE PARTNERS

You'll want to make sure that the OCR package you buy also controls the scanner you own. All the packages reviewed control at least one scanner directly. (For detailed information on compatibility, see the accompanying chart.) Some programs, like Read-It!, claim to work with any scanner because they open the image files that most scanners support — TIFF, PICT, bit map. However, that approach is time-consuming because you have to use two applications (the scanner's imaging software and the OCR program) to accomplish your task.

Another factor that can cut down on time spent is the amount of control an OCR package offers before scanning. One of the obstacles in effective OCR is isolating text from other extraneous elements on the page, such as graphics, letterheads, and rules. No OCR program for the Macintosh has enough smarts to distinguish a graphic as such on its own. When encountering a graphic, most OCR programs will try to parse it as text, which results in a long wait and lots of gibberish.

> The desktop publishing world now contains so many different typefaces that it's difficult for a program to recognize them all.

To get around this, most programs allow you to define the single rectangular area of the page that you want scanned. Although this limited solution lets you eliminate most letterheads, more complex pages with multiple graphics still require you to isolate text from graphics after a page is scanned and before it is sent through the OCR process.

At least one program, however, gives you control over the page without the extra step between scanning and OCR. Microtek's MacinTEXT lets you mask out any part of the page to exclude graphics. (See Figure 1.) More importantly, it also lets you define separate areas on the page that are to be run through the OCR program. This is particularly useful if you are processing multiple copies of the same form. You can, for instance, designate only the fields that were filled in by a typist and not worry about processing the form's instructions each time it is scanned.

The one problem with defining areas before scanning is assuring that the page is physically aligned to the electronic grid. If the page is off by even a fraction of an inch, you might end up cutting off part of a line of text. The easiest way to center a page precisely on a scanner is to use a document feeder. These add-ons, which are offered by most scanner manufacturers at an additional charge, feed pages along a set path with more accuracy than human hands.

Document feeders also prevent "skew" problems. Skew occurs when a page is put through the scanner cockeyed. If the baseline of the text isn't at a 90-degree angle to the edge of the paper, the letters appear to travel uphill or downhill. This confuses the OCR's matching tables. A certain amount of skew (1 to 2 degrees) is usually allowable during OCR, but a safer bet is to use a document feeder.

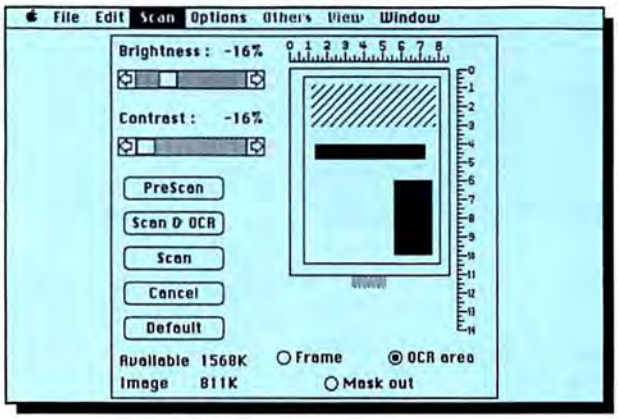


Figure 1: MacinTEXT lets you mask out graphics and set areas to be OCR'd on a page before scanning a document.



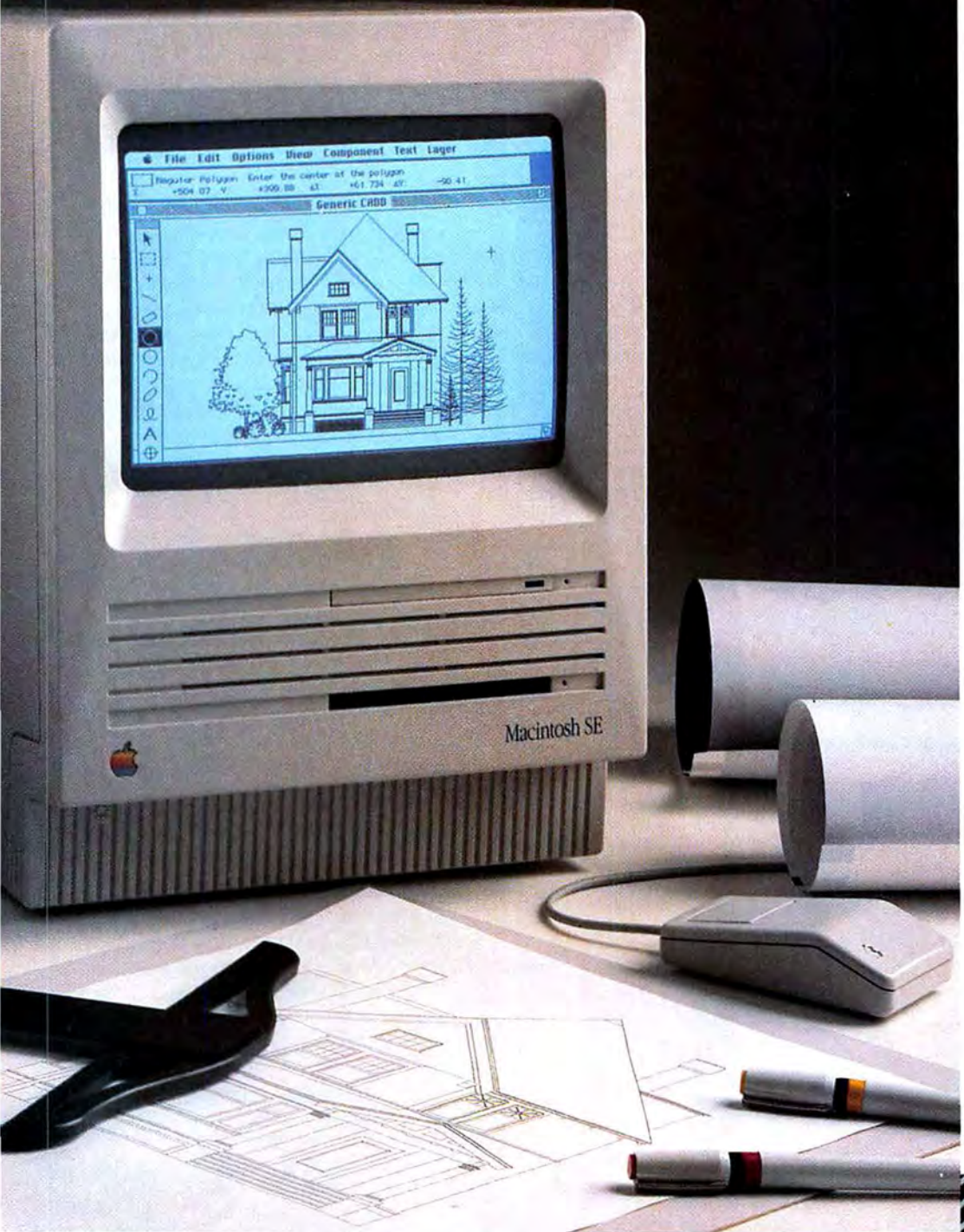
Figure 2: ReadStar II Plus has a statistics window (upper left) that displays which characters have been learned and gives recognition accuracy percentages.

SETTING THE TYPE TABLES

Part of the problem with OCR is that the desktop publishing world now contains so many different typefaces. As a result, it's difficult for a program to recognize them all. For instance, the lowercase Courier letter *g* differs from the *g* in other faces — so much so that it could easily be mistaken for Prestige Elite's *q*.

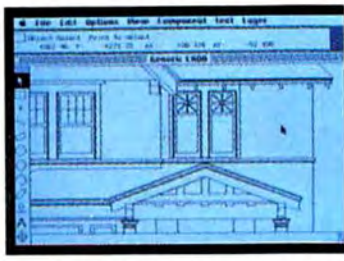
OCR packages approach the font problem in a variety of ways. Some

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SOFTWARE

packages include type tables that you load into memory before running the OCR program. This assumes that you know what font was used on the page you are trying to read. If you're dealing with documents that were typed ten years ago, the typewriter might not still be around. Other packages, like Publish Pac, take an "omni-font" approach. Here you don't need to tell the program what font it is trying to read; the program looks at the general characteristics that most letters have in common.

Still other systems require you to build the font files yourself. As you read a page, you teach the program to recognize certain characters that it then remembers and saves in a separate file. ReadStar II Plus is one such program. (See Figure 2.) Some programs mix the two approaches. Read-It! comes with font files that you can then customize for the peculiarities of your particular typewriter.

MacinTEXT and Read-It! include some standard Apple LaserWriter fonts. The question is, of course, why run a page through an OCR program if it was generated on a Mac in the first place? There might be a small need for Apple fonts if your system crashed and your only backup was hard copy, but that would be rare and certainly not the best way to back up your data.

The reliance of OCR packages on computer fonts has gone to even more ridiculous lengths. The technology has actually spawned two fonts of its own. The fonts, named appropriately enough OCR-A and OCR-B, are optimized to increase the recognition rate. At first it seems ironic that the fonts even exist, but there is a reason. A retail store, for instance, can use the font for labeling products and prices. When an item is bought, the tag is scanned to update the inventory. However, bar code technology is more reliable and faster than OCR, and its widespread use has virtually eliminated OCR's chances in that market.

Testing Rules and Results

The tests were conducted using a Macintosh II with 2 megabytes of memory and a 40-megabyte hard disk that had 12 megabytes of free space. The scanners were all SCSI-driven. The sample consisted of a seven-page typed document that used a monospaced Prestige Pica font. The document was 1,261 words long and had a total of 8,323 characters.

At first glance, it looks like MacinTEXT is the winner for speed and accuracy. However, the file it generated contained a carriage return at the end of each line. Publish Pac was a close second, but is in many ways more desirable since it formats documents with "running text" — only inserting a carriage return at the end of each paragraph.

Although ReadStar II Plus, Read-It!, and TextScan have lower accuracy rates, it should be noted that these programs are based on "learning" a font as they process it. When a unknown character is encountered, the program stops and "queries" the user for the correct character. A different document was used to teach these programs the font being used until satisfactory results were obtained. The test document was then run with the program's "query" capability turned off. The accuracy would have been better if the "stop and check" mode had been activated, but then again, it would have taken more time too.

The decision to buy a program should be based on particular needs. If you must accommodate a wide variety of fonts, one of the "learning" OCR programs might prove to be the best choice. However, you'll have a much easier time processing documents if the font you need to OCR is supported by MacinTEXT or Publish Pac.

CHARACTER ASSIGNATION

Before an OCR program even attempts to match characters, it has to separate the letters into individual bit maps. This is known as *parsing*. For monospaced fonts, parsing is simple. Each character in a monospaced font is of equal width, regardless of how big the character actually is. To parse the letter you only need to draw a square around each character. This is as if you superimposed a piece of graph paper over the image.

Proportional fonts, on the other hand, vary the space according to the width of the letter. Fonts that are typeset often contain kerned letters. This is where the space between two letters is tightened (or sometimes loosened) for readability (or artistic concerns). To parse a kerned font, the OCR program must lasso that part of the letter that hangs over another. Some letters are kerned so tightly that they actually touch. Since OCR programs usually can't distinguish between the two bit maps, they compensate by allowing you to designate two letters for one image. ReadStar II Plus is the only program among the five reviewed here that is sophisticated enough to lasso kerned text. In fact, in some ways it works better with typeset text than it does with typewritten pages.

MATCH GAME

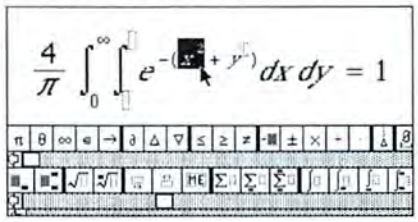
After the type is parsed, it must be read. You can do this in several ways. Matching bit maps to ASCII characters breaks down into two basic methods: matrix matching and pattern ex-

RESULTS	Words Per Minute	% of Accurately Read Characters	% of Accurately Read Words
MacinTEXT	325	99.53%	96.91%
Publish Pac	203	99.07%	93.82%
Read-It!	63	98.30%	88.65%
ReadStar II Plus	150	96.90%	78.98%
TextScan	150	96.91%	79.54%

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Figure 3: Read-It!'s Learn & Recognize mode queries the user on an unknown character.

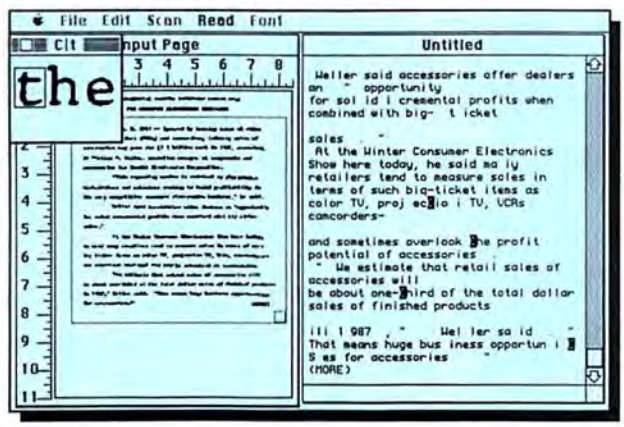


Figure 4: TextScan is the only OCR program tested that offers global modification of incorrectly recognized characters.

traction. Matrix matching searches a type table for an exact pixel-by-pixel duplicate of the bit map. Pattern extraction examines the structure of a letter rather than its shape. The idea is to isolate strokes and loops that are characteristic of a letter. Pattern extraction is more appropriate for proportional typefaces. It's also slower. Most packages use a combination of the two methods: Using matrix matching for monospaced fonts and pattern extraction for proportional type is a common solution.

Actually running an OCR program can be as simple as choosing a command and waiting for the text to appear (MacinTEXT and Publish Pac) or as complicated as teaching the program the font as it processes a document (ReadStar II Plus, Read-It!, and TextScan). In the latter case, this usually consists of looking at the bit map of a character and typing it on the keyboard. (See Figure 3.) The theory is that after you've processed enough documents, the font will become known and you can switch the program into automatic mode. In practice, you get the best results when the "query" function is active — even after extensive learning sessions.

Getting a wrong match is commonplace. How an OCR program reacts to an unknown character is sometimes more critical than the fact that it actually made a mistake. Most respond by putting in an uncommon character — such as when you try using a spelling checker on the document. If the unknown character falls in the middle of a word, most checkers will see that single word as two words. This makes it difficult if not impossible to replace the misspelled word with the correct one. The more versatile OCR pro-

grams let you assign your own character. This way you can use an uncommon alphabet character (like the uppercase *Z*) which is compatible with a spelling checker but which will seldom spell a real, though incorrect, word.

TextScan goes even one step further. It lets you make global changes to a recognized character immediately after a document has been OCR'd. (See Figure 4.) If all *I*s were recognized as *!*s, for instance, TextScan lets you correct the mistake without changing what should be an exclamation point into the numeral 1.

FORM VERSUS FUNCTION

Another critical element in OCR is how well the software maintains the original formatting. A program can have an outstanding recognition rate but still require extensive editing because the layout isn't maintained. For instance, it's difficult for most programs to distinguish between an end of a line and an end of a paragraph, so every line is given a carriage return. This means you'll have to strip out all the extra returns if you want to rework the document in a word processor. Also, most programs won't compensate for words that were hyphenated at the end of a line. The exceptions to these problems are Publish Pac and ReadStar II Plus. Both programs insert a carriage return only at the end of a paragraph. They also rejoin words that have been hyphenated at the end of a line (this can be a mixed blessing if the correct spelling of a word already contains a hyphen).

WHAT'S NEW, BUT NOT NEW?

OCR technology is moving forward rapidly. What was unavailable last year is now within easy reach of most consumers. Yet some critics contend that OCR will be out of date by the time it gets up to speed. They say it's a matter of attrition: As the Morris Q.'s of the world give way to more modern methods, there will be less of a need for OCR. Still, there remain millions of pages of documents in company file rooms waiting to be input into computers. Furthermore, as FAX/modems become integrated into Mac IIs and SEs, the demand for OCR will also increase. A FAX creates an image of a document that is then sent over the phone lines. OCR answers the need to then convert those documents into ASCII for document processing.

As it stands, optical character recognition on the Macintosh won't win any spelling bees, but in most cases it's significantly faster than the average typist. In fact, in a small desktop publishing operation, it might be an economical alternative to hiring a typist to input manuscripts.

BEN TEMPLIN IS THE REVIEWS EDITOR OF MACUSER.

MACUSER RATING

MacinTEXT ★★★½

Follows Mac Interface	■ ■ ■ ◧ □
Printed Documentation	■ ■ □ □ □
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ ■ ◧

Comments: A fast and easy OCR package for typewritten text. **Best Features:** Lots of pre-scan control over page. Good for forms-processing. **Worst Feature:** Inserts a carriage return at the end of each line. **List Price:** $195. Requires 512KE, Microtek-brand scanner. MultiFinder hostile. Mac II friendly. Version 1.01a reviewed. Published by Microtek Lab Inc., 16901 South Western Avenue, Gardena, CA 90247; (213) 321-2121. Not copy protected.

MACUSER RATING

Publish Pac ★★★½

Follows Mac Interface	■ ■ ■ □ □
Printed Documentation	■ ■ ■ ■ □
On-Screen Help	■ ■ ■ ■ □
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ◧ □
Consumer Value	■ ■ ■ ◧ □

Comments: Integrated text and graphics scanning software for DEST scanners. **Best Feature:** Maintains format of original document. **Worst Features:** Only works well with monospaced fonts. No learning feature. **List Price:** $595. Requires 1 megabyte and a DEST PC 1000 or PC 2000 scanner. MultiFinder hostile. Mac II friendly. Version 2.0 reviewed. Published by DEST Corp., 1201 Cadillac Court, Milpitas, CA 95035; (408) 946-7100. Not copy protected.

MACUSER RATING

Read-It! OCR ★★★

Follows Mac Interface	■ ■ ■ ■ □
Printed Documentation	■ ■ □ □ □
On-Screen Help	None
Performance	■ ■ ◧ □ □
Support	■ ■ ■ □ □
Consumer Value	■ ■ ■ ■ □

Comments: A generic OCR package that works with any scanner that saves images as TIFF, PICT, or bit-mapped files. **Best Feature:** Type tables can be customized. **Worst Feature:** Takes a long time to teach the program a font. **List Price:** $395. Requires 1 megabyte, hard drive. MultiFinder and Mac II friendly. Version 1.05 reviewed. Olduvai Corp., 7520 Red Road, Suite A, South Miami, FL 33143; (305) 665-4665. Not copy protected.

MACUSER RATING

ReadStar II Plus ★★★

Follows Mac Interface	■ ■ ■ ■ □
Printed Documentation	■ ■ ■ □ □
On-Screen Help	None
Performance	■ ■ ■ ■ ◧
Support	■ ■ ■ ■ ◧
Consumer Value	■ ■ □ □ □

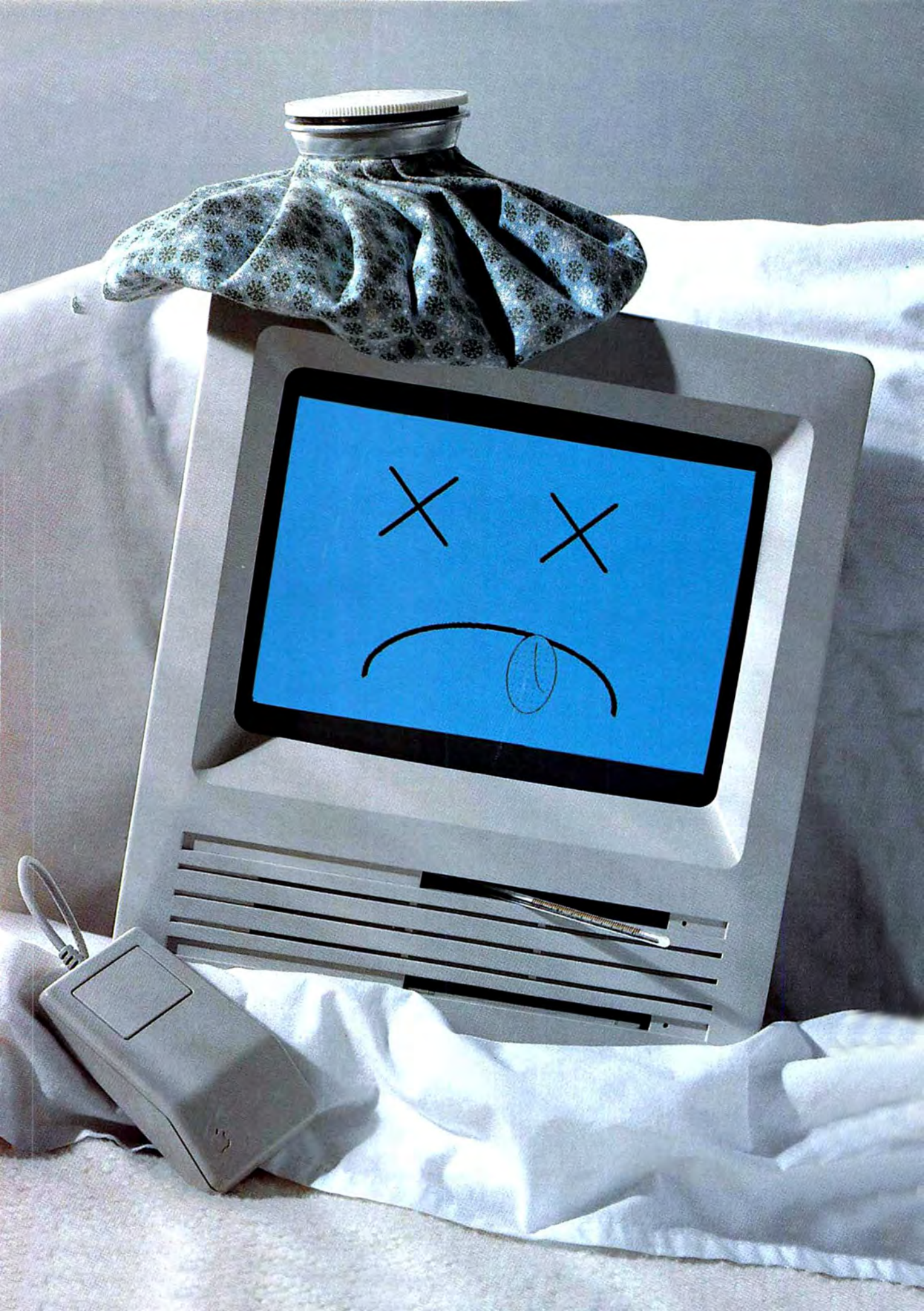
Comments: An OCR program that learns almost any font on the fly. **Best Feature:** Ability to interpret proportional and typeset fonts. **Worst Feature:** See List Price. **List Price:** $4,500. Requires 2 megabytes and Microtek or Canon scanner. MultiFinder hostile. Mac II friendly. Version 1.04 reviewed. Published by Inovatic, 1911 North Fort Meyer Drive, Suite 708, Arlington, VA 22209; (703) 522-3053. Copy protected.

MACUSER RATING

TextScan ★★★

Follows Mac Interface	■ ■ ■ ■ □
Printed Documentation	■ ■ □ □ □
On-Screen Help	None
Performance	■ ■ □ □ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ ■ □

Comments: An OCR system that "learns" the fonts you need to process. **Best Feature:** Global correction of misread characters. **Worst Feature:** Limited pre-scan manipulation of page. **List Price:** $295. Requires 1 megabyte and Canon-based scanner. MultiFinder hostile. Mac II friendly. Version 1.2 reviewed. Published by New Image Technology, 9701 Philadelphia Court, Lanham, MD 20706; (301) 731-2000. Not copy protected.



Razor Blades in Apples

Trick or treat? Viruses innocently disguised as stacks or applications have caused users more problems than they could click a mouse at.

Viruses have been in the news recently. However, these aren't the sort of viruses that you're likely to read about in the *New England Journal of Medicine*. While there has been some coverage on the national news, both "60 Minutes" and Geraldo Rivera have ignored the topic so far. Just what are these viruses that have plagued the Mac community over the past few months?

Can you get them by using certain printers? Aren't some paint programs the cause? Can they spread over connecting cables? Can you get them from your keyboard? Misconceptions about viruses are legion, and often breed panic. It is important to understand that viruses will mostly cost you time and aggravation because you'll have to end up restoring most, if not all, of your applications. While not totally immune to viruses, data is very unlikely to become a carrier. However, there have been instances where viruses have eaten data.

Computer viruses, not unlike the biological variety, are self-replicating. They have a self-replicating code and get into resources such as INITs and CODE. So far, we know that they spread from one computer to another (and within this, from System file to System file) through infected applications. You can get infected applications from on-line services, from bulletin boards, and from disks you swap with friends.

Once in a new host (your Mac), the virus spreads to other places, usually System files, where it may lie dormant for days, weeks, months, or even years before wreaking its havoc. Once active, the virus can cause all sorts of

BY KRISTI COALE

problems. These may include causing defective printing as well as modifying or destroying data.

CREATING IS DESTROYING

Your offspring can return to haunt you. Remember Lizzie Borden? The same is true where computer viruses are concerned. Just as the Cold War was beginning, John von Neumann, father of the modern computer, began experimenting with self-reproducing code. As the computer technology improved, so did virus technology, which relies heavily on self-replicating code. By the late 70s, we had Core Wars, a game program that implemented an artificial environment in which viruses attacked each other.

THE BIG THREE

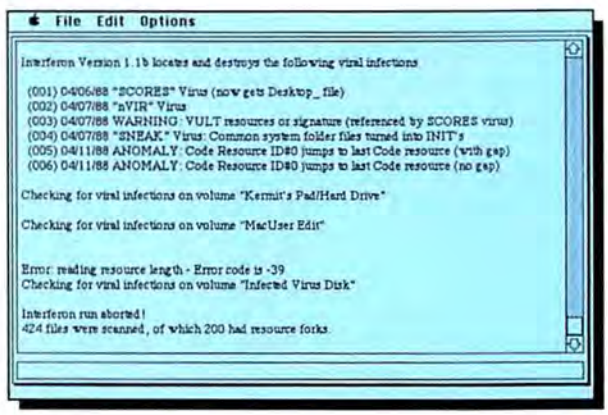
Andy Warhol once said we'd each be famous for 15 minutes. If that's true, then Richard Brandow got his quarter hour's worth earlier this year when he released the MacMag virus. Unfortunately, Brandow also reopened a Pandora's box that invited second-rate programmers to improve upon his mess. This negative creativity has brought about other inflictions, including nVIR and Scores. Scores, the third known virus, actually predates MacMag. Evidence shows it has been around since early 1987.

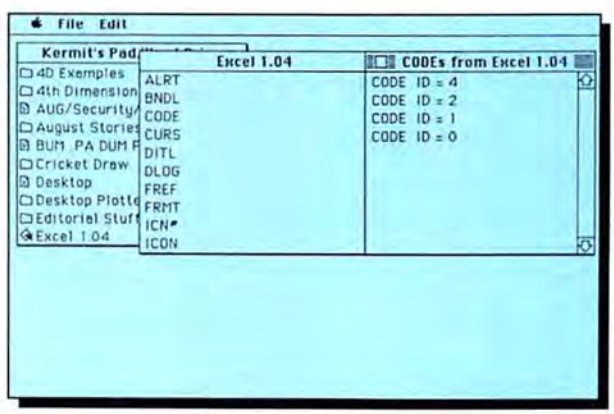
WHO WAS THAT MASKED VIRUS?

The MacMag virus, intended as a harmless prank, was designed to display a "universal message of peace" on March 2, 1988 (to mark the first anniversary of the introduction of the Macintosh II and Mac SE). After displaying its message, it removed itself from the disk it was on. All that's known about its origins is that it was uploaded on on-line services in a HyperCard stack that contained the virus in an XCMD resource. It also spread through bulletin boards and the swapping of disks. The real scare involving this strain was that Aldus wound up with it on its master training disks for FreeHand. The virus was present in the System folder of a self-training disk developed for Aldus by MacroMind. MacroMind's copy came directly from Brandow who gave an infected disk to MacroMind's Marc Cantor.

Fortunately, FreeHand customers have yet to report any real difficulties resulting from this infection. Some users were alarmed when screens went blank, but, according to Aldus, there were no further problems.





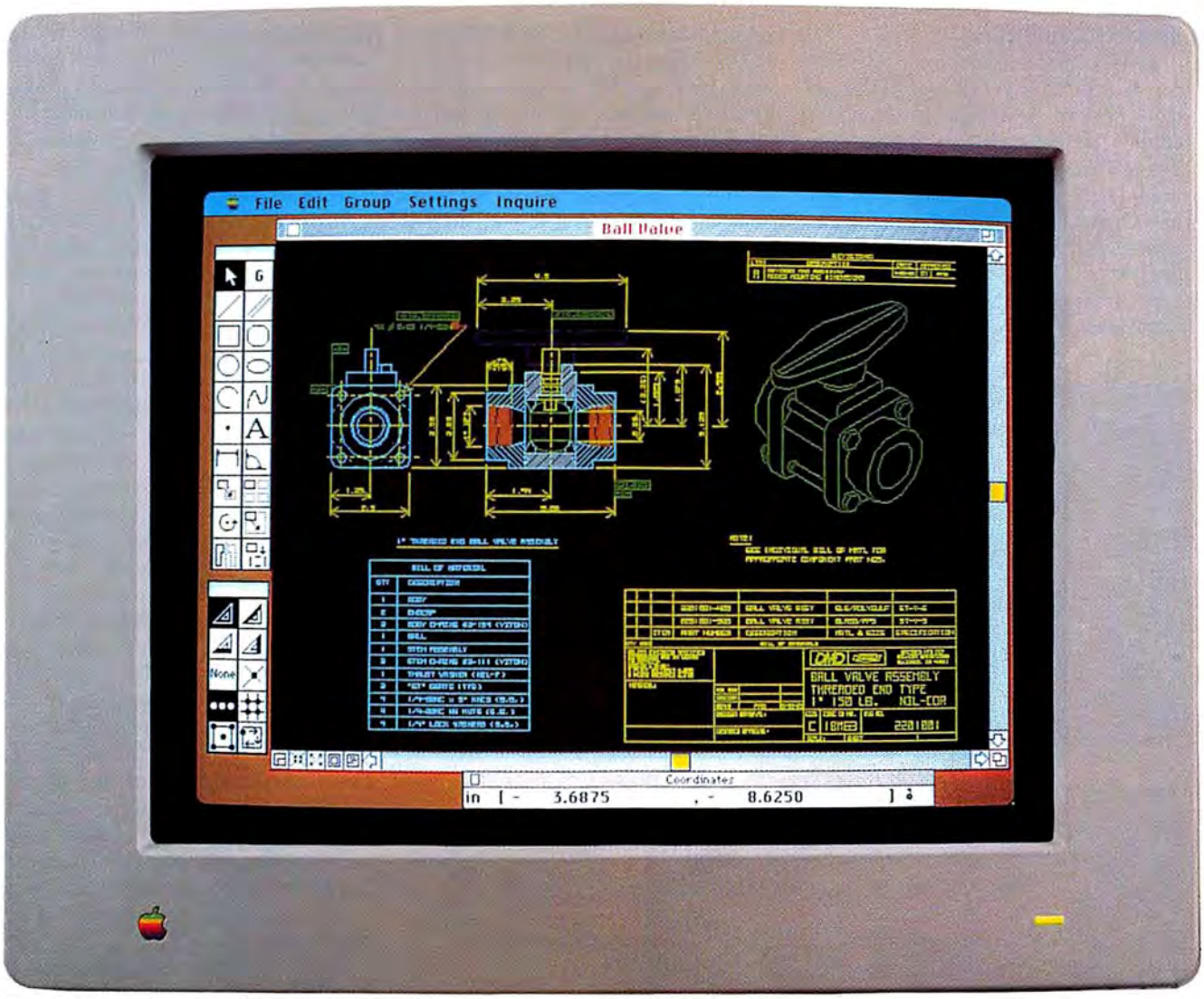


Running "search-and-destroy" programs such as InterFeron and Virus Rx will eradicate the Scores virus. InterFeron, which also works on nVIR, will scan all files on a given drive, going through the CODE and INIT resources. Virus Rx will list any damaged applications: INIT, cdev, and rdev files, invisible files, altered system files, and altered applications, reporting on the conditions of each. Next to each report, you will see comments such as "dangerous" and "fatal."

Scores gets into resources such as CODE. Within CODE, Scores will install its own CODE resource segments. These segments are numbered beyond other existing segments. Look for a gap of two between the last real segment in your application and the Scores segment.

> Because misery loves company, many in the Mac community have had the pleasure of sharing the experience.

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KNOW THE SCORES

Scores, the most common Mac virus, was designed for a specific malicious purpose: to attack custom applications designed at a company in Texas. Because misery loves company, many in the Macintosh community have had the pleasure of sharing the experience. For those armchair Mac doctors out there, the Scores virus typically causes difficulty in running MacDraw or Excel, in printing from applications (especially MacDraw), and in using the Set Startup option. And that's not all. It also vandalizes Excel files and causes your System to crash frequently when you try to start certain applications. Though that's a sizable laundry list of Scores's functions, in no way does it sum up all that Scores can do to your computer. You see, Scores is unpredictable.

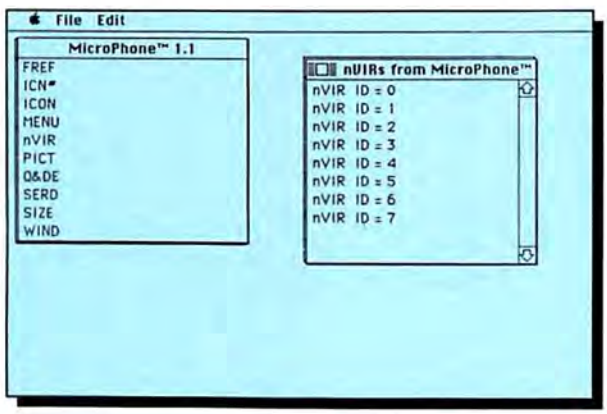
If you're still not sure whether or not you have Scores, open your System folder and examine the icons for the Scrapbook and Note Pad files. Infected systems will show these as generic document icons, not as Mac computer icons. This is not, however, a definitive sign that you have Scores.

Because Scores attacks only applications and System files, you can also use ResEdit to look at those files. ResEdit enables you to see what's inside disks and applications. If a disk is infected, you'll see the files with the names "Desktop," "Scores," or "2 Virus ResEd" in your System folder. [*Editor's Note: You should differentiate between what's in your System folder and what's on your desktop. A Desktop file will appear on your desktop. This is normal. Worry only if the file appears in your System folder.*]

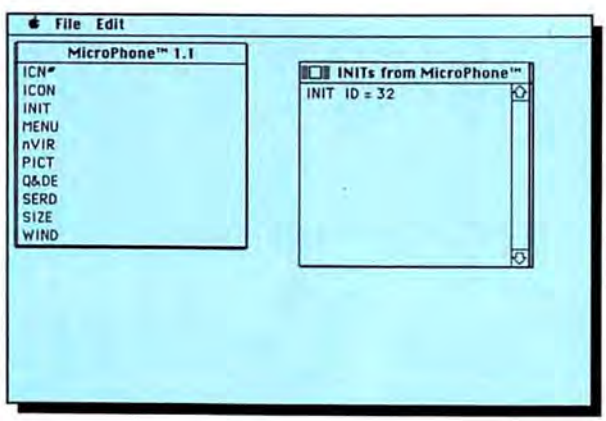
Scores acts on the CODE resources in your System file. You can check applications to see if Scores has installed itself. All applications contain at least one resource with the type name CODE. Usually there are several CODE resources, each with a different ID. (If there's only one, its ID will be 0 and the application is not infected with Scores.) Ordinarily, CODE segments are installed as an application needs them. These segments can be used in any order, although when you look at them in ResEdit, they appear in numerical order.

Scores modifies an application by installing a CODE resource of its own. When you select the application, this segment gets called before the application actually runs. The ID number of this scores-installed resource is always two higher than the highest previous CODE resource. That means there will be a gap in the numbering of the CODE resources.

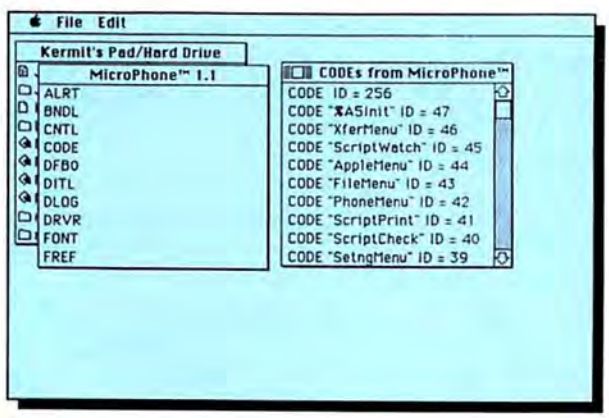
Here's an example. You check an application's CODE resources (in ResEdit) by double-clicking first on the application's name and then on the word *CODE*. You'll next see a list of Code resources. Let's assume the programmer created five CODE resources in this application. If the application is uninfected, they are numbered 0, 1, 2, 3, and 4. If Scores had struck, there would be six CODE resources and the last one would be number 6 (0, 1, 2, 3, 4, 6).



Like Scores, nVIR installs its own CODE segments in CODE resources. They are numbered 0-7. To safeguard an application's system, you can create a "/" set of segments through ResEdit.



When checking to see if you have nVIR, use ResEdit to check through the CODE and INIT resources. If you find an INIT 32 in an application, you have nVIR.

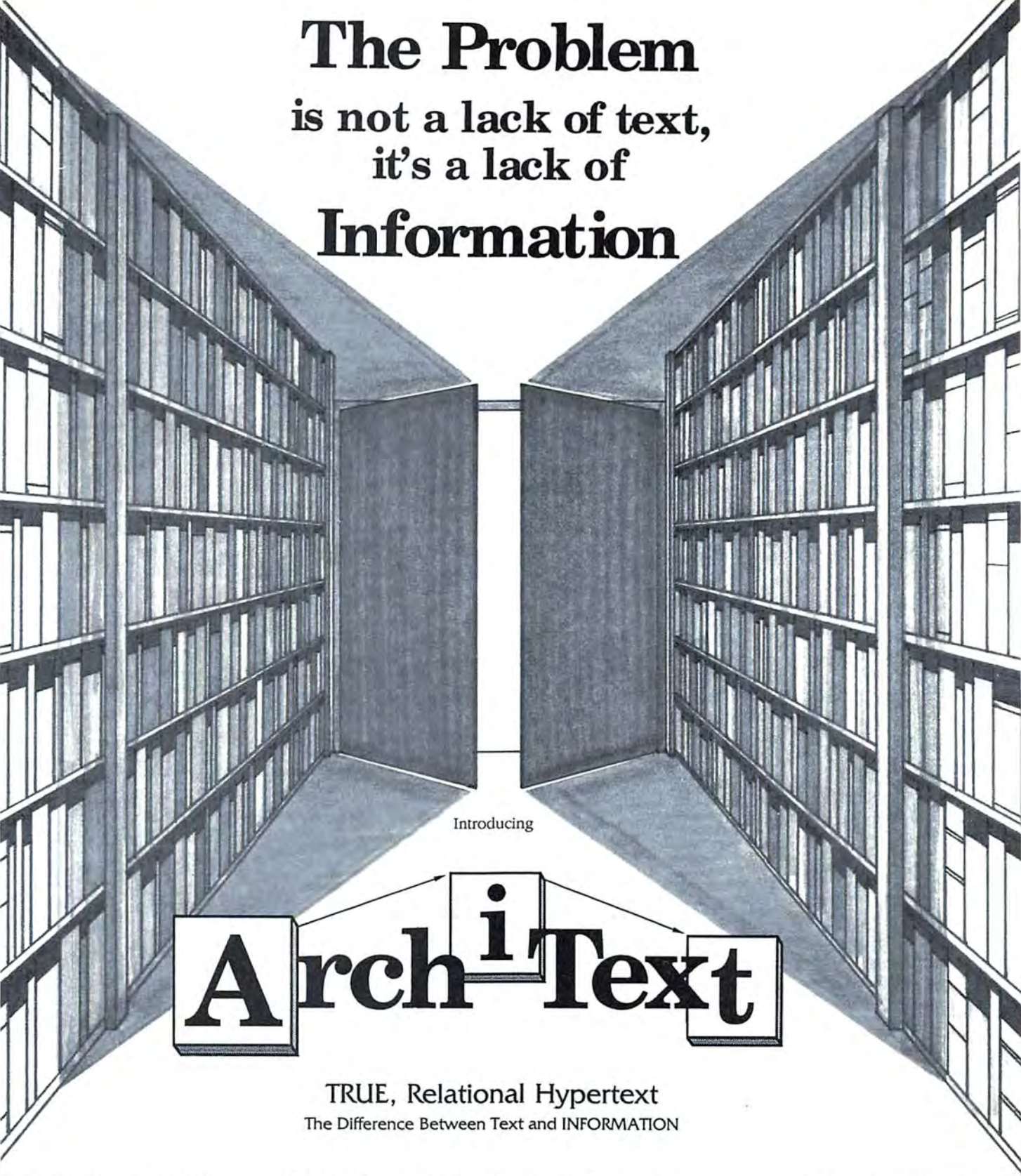


Another symptom of nVIR is found in the CODE resource. Just as Scores installs its own CODE segments, so does nVIR. The difference between the two is that the segment installed by nVIR is numbered well above any existing segments (i.e., CODE 256).

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SETTLING THE SCORES

Ridding your Mac of this virus is much like the department store clerk cleaning up right after a clearance sale — you have to salvage the good stuff that's left and do away with the rest.

> The best way to clean out your hard disk would be for you to throw out the infected disk, initialize your hard disk, and begin rebuilding from locked, uncontaminated programs.

About the only thing you can feel safe about keeping, initially, are your DAs. Scores doesn't infect these. You can feel reasonably safe about data, too.

To ensure that you're running on a clean system, boot your Mac off a clean, locked floppy System disk. Now, throw your hard disk's System folder in the trash. Empty the trash immediately. The next step is a matter of preference. The best way to clean out your hard disk would be for you to throw out all your applications, reinitialize your hard disk, and begin rebuilding from locked, uncontaminated, unadulterated, brand spanking new, clean programs. This method will get rid of any virus.

On the other hand, if you have a fetish about some of your applications, then sifting through the ruins is for you. If you choose this option, you should be careful to check your old disks frequently for infection. Remember, viruses may be in your applications in an inactive state.

Under no circumstance should you keep any of your System files. Throw these in your trash and empty it. Now you can use ResEdit and the methods previously described to check each of your applications for Scores. Make a list of those applications with the virus and throw them away. Save the uninfected applications on clean floppies, which should be locked as soon as you copy the files onto them. Then reinitialize your hard disk, and begin the reconstruction.

nVIRONMENTAL HAZARDS

nVIR is like the fifth Beatle or the proverbial third wheel. It exists and people are aware of it, but it doesn't get a lot of attention. The most visible, or in this case audible, symptom of this virus is a beep that goes off when you launch an infected program. For those of you with MacinTalk, you might hear the message "don't panic" when you start up an infected application.

Like Scores, nVIR modifies applications by installing its own code segments in the application's resources. nVIR resources are installed each time you launch an application. The code will search the System folder for its INIT, and if it doesn't find it, the code will copy it there along with nVIR resources 0 through 7. Once in place, the virus will infect every application through its INIT (ID = 32). nVIR also adds CODE ID = 256 as a resource. Fortunately, this virus is not very common and has had little effect on the Mac community.

Apple Bites Back

Viruses have recently been a hot topic of conversation among people in the Mac community. On-line services have been crowded with messages from people airing their frustrations and giving advice on combatting these pesky little parasites. All this sharing of information is great, but it also leads to spreading misinformation.

One of the main players in the Mac community, Apple, remained mute on the subject until recently. As the seriousness of the damage caused by the viruses grew, Apple decided to take measures to help those afflicted with viruses and to punish or discourage the saboteurs. For the latter, Apple called in the FBI.

Tampering with computer data is already considered a felony. Apple wants to make it clear that creators of computer viruses will be prosecuted to the fullest extent of the law.

As for the innocent victims, Apple has provided Virus Rx free of charge along with guidelines for dealing with the viruses. They are doing this as a public service to quell the misinformation about viruses. Apple will not provide other versions of Virus Rx nor will they provide technical support for the product. They ask that you follow this advice:

Software that you distribute through a BBS should always be inspected and tested for viruses before making it available for downloading. Don't assume that others will have the knowledge or common sense to check their own systems before using such a program.

Keep any unfamiliar, noncommercial software (such as the programs you get from bulletin boards) on a floppy disk until you determine it is free of contamination.

You should test noncommercial software several times before installing it on your hard disk or exposing other application or system disks to it because viruses can lay dormant for a period of time.

To test unknown software, boot your Mac off a floppy disk. Drag your hard disk icons into the trash; this disengages them. Turn off any external hard disks you may have. Through Get Info, note the sizes of the operating system and related files. While most of these remain the same size, others such as the Scrapbook and Note Pad will change in size as you use them.

After running these initial checks, place a familiar application on the same disk as the unknown software. A familiar application is one where you know all the operations and behaviors. Run this unknown program for a few days, noting changes in the sizes of your files and the behavior of the familiar application. It is important that you back up files and application software on floppy disks after completing this process to ensure your Mac against infection. If you find that your System or applications have been contaminated, reformat the disk that held the unknown program and restore all your files.

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SAVING YOUR RESOURCES

Safe computing practices aside, you can make your System file immune to nVIR, thanks to MacTutor's Mike Scanlin. Fighting fire with fire, Scanlin suggests you create your own INIT 32 resource and mimic the installation of the virus. Yours will have two hex bytes: 4E 75 (for those interested, that's a Return To Shell (RTS instruction or Quit command). Replace the real nVIR INIT 32 (366 bytes) with your 2-byte version and create eight resources of the type nVIR with IDs 0 through 7 (all with 0 bytes). Again, if the eight resources already exist from the virus, replace them with the ones you have created.

Pay attention to uppercase and lowercase when naming the resources; you must name yours nVIR, not NVIR or nvir. The result is a placebo virus. When you run your application, the virus will think it's already installed (it reads the INIT and nVIR resources), thanks to your imitation. Remember, this works only for nVIR.

Also exclusive to nVIR are VirusWarningINIT and Vaccination, both written by Scanlin. VirusWarningINIT is a virus alarm that sounds whenever one of its two patches runs across the nVIR resources or the nVIR CODE segment. Vaccination searches for nVIR and reports on the status of a given application. It also works to prevent the virus from infiltrating your system. To get rid of the virus, you can launch ResEdit and follow the steps of looking for infection and cleaning it out as described for Scores. However, one unfortunate feature of nVIR is that it sometimes can reinstall itself after you have launched ResEdit to get rid of it.

Rx FOR VIRUSES

Today, it seems that there are people who do nothing but think up new ways to hurt others. Unfortunately for the Mac community, some second-rate programmers have time on their hands to dream up "new and improved" viruses. Don Brown of CE software, among others in the Mac community, has expressed such concerns. Not wanting to "add fuel to the fire," Brown has said he will give us

Death of a Virus

It's one thing to read about how much trouble a computer virus can cause a computerized business and quite another to actually have it happen. When computers are your business, the mere suggestion of mysterious data loss and computer bugs appearing where none were before is a manager's nightmare.

At *MacUser* we have at our disposal the most up-to-date information concerning the Scores virus and its effects, and (as soon as they were released) the various bits of software to detect and eventually destroy it. You'd think that with all these resources (not to be confused with application resources), we'd follow all the precautions and prevent the viruses from entering our computers. Wrong. When you're a computer magazine, you have access to software from all over the planet. Couple this with our power users, and you've got virus.

Trouble came on April 20th. Our technical director and I decided our first course of action would be to install Vaccine, one of the first virus-detection programs to hit the streets. Vaccine worked exactly like it was supposed to, warning of resource alteration whether it was legitimate or not. However, the virus still managed to spread to five machines before it was detected, not because the people were inexperienced with computers or viruses, but because they were power users. There was a tendency to hit the carriage return whenever a dialog box came up, thus granting permission for the virus to do its dirty work. Fearing that the virus might spread via the network, I wound up testing every machine we have (over 60 machines) for contamination. Fortunately, the tests quelled my fears as the virus had not spread to others.

The first bit of software I had been experimenting with was Virus Detective, but a run on a machine known to be infected proved it faulty (it claimed that the machine wasn't infected). Ferret 1.0 did find the problem, and on four of the five machines it managed to eradicate the virus. The fifth machine turned out to be a problem because the virus had thoroughly infected the hard disk. Also, the software we used wasn't catching all incidents of infection. Running Ferret 1.0 (and later 1.1) seemed to remove the resources that the virus had implanted, but within five minutes the Vaccine alarm would be going off again. After several days of quarantining disks coming from that machine, a copy of KillScores did the job just as I was seriously contemplating reformatting the hard drive and burning all the floppies.

That weekend Apple came out with Virus Rx and the accompanying statement that "virus killers" were an inefficient means of destroying an infection because they tended to skip the occasional resource. Well, at least Rx gave my problem machine a clean bill of health.

Scores becomes active only when you run an application in the presence of an infected disk, which slowed the progress of the disease in some machines. Those were the machines from which Scores was easily removed. Unfortunately, such was not the case in the one machine where the virus had established the infamous invisible Scores files that gave it its name. Even though Ferret found the invisible files, it missed some resources, allowing the virus to recur.

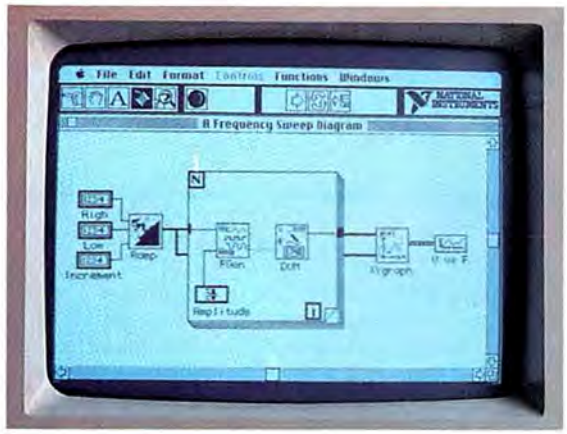
We eventually discovered what happened. Armed with infection dates reported from Ferret, I was able to plot an exact path from machine to machine. It led me not to some infected commercial or public-domain software but to a rental computer's hard disk. At first I thought I was mistaken, because the rental's floppy disks were uninfected. Then I realized that the rental had come with the hard disk formatted and with a System installed.

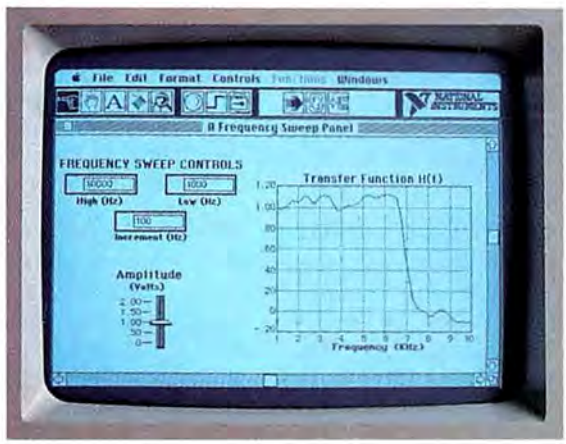
Because I knew when we had acquired the rental computer, I figured that the virus appeared within six weeks. Careful questioning revealed exactly when and how the exposure took place from that machine to the others. It hadn't been over the network, but through disk-swapping. A check of the file server showed that it was clean, which completed the picture. When I called the rental agency to tell them that their hard disks might have been infected since January 11th, I spoke with someone who didn't even know what a computer virus was. Now, computer rental agencies aren't to blame for the virus, but if you happen to work for one you should at least be aware of how to check a rental's disks before you give it to a customer.

Don't take a rental agency's word as gospel that their software is clean. Check it yourself on a machine that is not on the network, without a hard disk attached, and with clean detection software.

— *John Halbig*







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Just StuffIt

You can't be too careful these days when it comes to swapping files and applications among computers. Everything becomes suspect. Unfortunately, one of the tools that can help overcome this, StuffIt, has had to endure some of this suspicion because a previous version (1.20) was modified, infected, and passed around in Texas. The current, and completely safe, version of StuffIt is 1.40B.

StuffIt makes it easy to transfer files, either singly or in groups, with modems. It not only groups files into neat packages, but also substantially and efficiently compresses them. And the resulting "stuffed" file is a data file. Even if the package contains applications, there are no resources in the file. What does that have to do with viruses? Plenty, as far as suspicions go.

Since viruses infect applications by getting into their resources, you can be pretty sure that any StuffIt file you save is free of infection, provided the file was cleaned before it was stuffed. So feel free to StuffIt anytime.

only one version of his Vaccine. Submitting to the deeds of these programming terrorists and creating better versions of Vaccine, Brown feels, would be a waste of time and effort. Vaccine, a public-domain INIT, is designed to prevent any of the three viruses mentioned here from invading your system. It's good about warning you when a virus is about to infect your system, but it's easily bypassed.

Falling under the category of search-and-destroy programs, Interferon 2.0 works on Scores and nVIR by searching through the CODE, cdev, rdev, and INIT resources. It will scan all files on the drive you select. Once a virus is sighted, you click on the Eradicate function and the virus is destroyed. Before you get too far into the destroy mode, you should make a backup of your infected disks. This will save you from deleting a valuable, yet uninfected, file. As you restore your files, check the new ones with the program. It's a good practice before using any unfamiliar disk to check it for infection by using Interferon 2.0 or other such software. Written by Robert Woodhead, Interferon 2.0 is public-domain software. If it works for you, you are asked to make donations to "The Vision Fund." Another program of this genre is Ferret 1.1, written by Larry Nedry specifically to remove the Scores virus from any drive. It checks every file on your hard disk and tells you when it finds an infected file. You then have the option to repair the file, skip the file, or cancel the search. When you select the Repair button, the virus is removed and the file is returned to its healthy state. Ferret 1.1, available for free on CompuServe and other on-line services, will also point out applications that are damaged and should be replaced. These "damaged" applications are not infected with Scores. Nedry has no plans to update the program.

Virus Rx, which is free from Apple, searches on your Mac to find the Scores virus. After examining all the files on a given drive, Virus Rx lists damaged applications; INIT, cdev, and rdev files; invisible files; altered System files; and altered applications, reporting on the condition of each (you will see comments like "dangerous" or "fatal"). Damaged applications are not necessarily infected with the virus, but they will not work. You should throw these out. The listing of INIT, cdev, and rdev files in your System folder gives you a chance to see what you have. You should find out why you have certain resources. Get rid of those that are suspect. If, among the invisible files listed, you see "Scores" or "Desktop" in your System folder, Virus Rx will label them as dangerous. If, next to a listing, you find the message that your System files or applications have been altered, you should replace these. For every "Fatal" message you receive, you have a corrupted application or System file. In this instance, reboot from a locked floppy and follow the procedures outlined for getting rid of Scores.

Another program that will attack Scores is KillScores 1.0, a program created by Howard Upchurch through a joint effort by MacPack and Apple Corps of Dallas. As with the others, this is provided free as a public service for the Mac community. KillScores will eradicate the virus in the System, Finder, MultiFinder, Scrapbook, and Note Pad files. It also removes the Scores and phony Desktop files and repairs most damaged applications. You start by creating a disk with a System, Finder, and the KillScores application. Open KillScores, select Remove Scores from the File menu, and choose the drive you want to repair. By selecting Open, you are choosing the file you wish to fix and starting the repair.

BUTTON UP YOUR OVERCOAT

The best way to guard against viruses, however, is not in the form of a program or INIT, it is to take up "Safe Computing." Know where your software has been. The commonest way to get a computer virus is to use software or "shareware" that is unknown to you. If you can't get the original version of a program and have to borrow from someone else, run any of the "search-and-destroy" ware on the disk to check for infection. Lock your master disks. Viruses cannot penetrate a disk once it is locked.

As for coverage of the virus epidemic, it is true that these programming terrorists are in business to gain notoriety. Perhaps we're feeding their egos by writing about them. However, truthful coverage is necessary in combatting this problem. Whether in print or electronic media (and that includes on-line services), we in the Mac community have the potential to send a message to these hackers that their services are unwanted. Computing should be left for positive creativity and constructive purposes. "All we are saying is give peace a chance."

AFTER RESEARCHING AND WRITING SO MUCH ABOUT VIRUSES, KRISTI COALE, ASSISTANT EDITOR, SUFFERED SOME PROBLEMS WITH HER OWN MEMORY. WITH THE HELP OF THE MACUSER VIRUS ATTACK TEAM, SHE HOPES TO RECOVER SOME OF HER DATA SOON.

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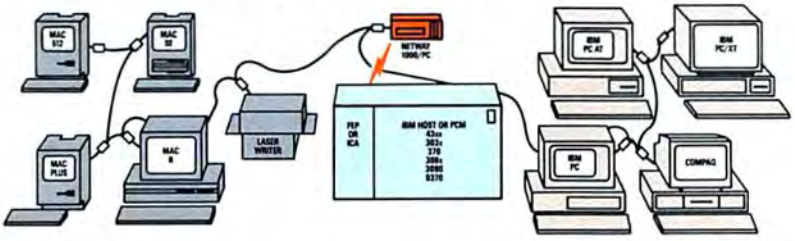
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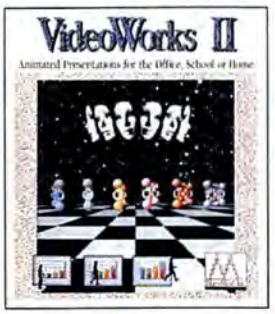
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A/UXILIARY INFORMATION

Beauty and the Beast — the Mac married to UNIX. The Macintosh operating system has become famous largely because of its pioneering achievements in interfacing humans with computers. UNIX is a powerful multiuser, multitasking operating system that originally ran only on minicomputers. UNIX was written by and for programmers, and where the Mac is famous for ease of use, UNIX is equally renowned for being obscure and puzzling.

A/UX, Apple's implementation of UNIX, has the potential of combining the power of UNIX with the sophisticated interface of the Mac. Its initial release created a demand for the Macintosh II in traditional scientific and engineering markets where UNIX has long been a standard. As A/UX evolves and programs become available that better use the Mac interface, both the UNIX and Mac worlds may change in very exciting ways.

"A/UXiliary Information" will keep you informed about new products and developments in the A/UX community. As the role of A/UX evolves, so will our coverage, enabling the curious and the committed to explore this newest direction in the life of the Mac.

Apple Steps into the World of Standards

BY VANESSA SCHNATMEIER

When Apple announced it was shipping A/UX, its own implementation of the multitasking, multiuser operating system called UNIX, the responses were what theatergoers call "mixed." Some industry observers thought Apple was making an error comparable to Louis XVI handing his executioner a sword and saying, "Let me know if there's anything else I can do." A handful reacted as though Apple had started shipping the annotated Ten Commandments on an 80-megabyte hard disk.

Apple views its move to this industry standard as absolutely necessary to hook into the major growth markets of the next decade and to connect with other industry-standard hardware and software. Has Apple cut its own throat by linking arms with an almost nonproprietary operating system, as some suggest? In future issues of *MacUser,* this department will discuss new developments in A/UX — who will buy it, who will use it, whether Apple really knows what to do with it, and what software and hardware are available for it.



The UNIX multitasking, multiuser operating system was born in AT&T's Bell Laboratories in 1969. Computer scientists designed UNIX to make it easier for themselves to create programs on medium-sized minicomputers, specifically the PDP series from Digital Equipment Corporation (DEC).

AT&T didn't pay much attention to the operating system in the 1970s. The company licensed UNIX to various universities and then commercially, largely to scientific/technical software houses, where it corrupted the young and scientifically minded.

Only in 1981 did AT&T look up and realize that this operating system had commercial potential: multitasking (the capability to run several processes at once), multiuser capability (the ability for many users to work simultaneously on the same system), transportability (the ability for code written on one UNIX machine to be



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carried over to another UNIX machine with a minimum of fuss and recompiling), a wide selection of programs prepackaged with the system, and strengths in communication and electronic mail.

Today, 10 percent of all computers worldwide run some form of the UNIX operating system. By 1991, it is estimated that 22 percent of computers will do so (according to the research firm International Data Corporation). UNIX has gained widespread acceptance in commercial and technical markets. Like taxes and IBM, it won't go away.

TOO MANY STANDARDS

The UNIX operating system comes in several versions, or "flavors," in industry jargon. Most people feel that the number of basic flavors needs to be reduced to one or two, though some industry observers have said UNIX needs at least four versions for different types of applications. The cornucopia of flavors came about when AT&T initially granted source code licenses to almost anyone who could pay the fee. As a result, UNIX versions multiplied like ice-cream flavors at Baskin-Robbins.

Until recently, the three major versions of UNIX were System V, the AT&T official version; Berkeley 4.2 BSD, which is under a license from AT&T and includes some desirable features — it was the first version of UNIX to take advantage of VAX hardware capabilities; and Xenix, a version available for the IBM PC AT and compatibles. Xenix is the most widely used, simply because it runs on microcomputers.

While these version turf fights continue, a national standards committee is expected to complete a vote soon on another operating specification, Posix, not owned by any school or company.

But while the voting was going on, AT&T committed what many UNIX companies consider a mortal sin — it signed an agreement with Sun Microsystems, a smaller company that's one of the brightest stars in the UNIX firmament. This agreement gives Sun first peek at upcoming releases of UNIX System V, though not necessarily a chance to sell products based on them first. Other UNIX luminaries felt Sun and AT&T were turning a supposedly open operating system into a closely held proprietary operating system, and formed a protest committee — even though Sun's success has been built on support for nonproprietary, open systems.



The UNIX operating system comes in several versions, or "flavors," in industry jargon. Most people feel that the number of basic flavors needs to be reduced to one or two, though some industry observers have said UNIX needs at least four.

Last May the UNIX community was plunged into furor over the work of that committee, which turned into a group called the Open Software Foundation (OSF). The OSF, whose initial members were seven of the world's largest computer firms, including IBM, Hewlett-Packard, and DEC, formed a non-profit foundation to create what they said would be a truly open system, not controlled in any way by AT&T. It is too soon to tell whether the OSF will produce anything usable within 18 months, as it promised.

ENTER A/UX

This is the environment into which Apple and A/UX have wandered.

So far, Apple has stayed out of the standards fracas. A/UX adheres to the UNIX System V standard and also includes many 4.2 BSD features. But Apple is more than just a me-too company jumping on the bandwagon. It has something to offer this market.

One of UNIX's problems is the level of difficulty it presents to beginning users. The main problems for beginners are obscure command names, difficult system administration, an almost user-hostile interface, and user manuals that were written for programmers by programmers. What Apple brings with A/UX is access to a consistent user interface known for its intuitive ease. If that were the only gift Apple brought to the UNIX community, the community would be well served.

A/UX programs hook into the Mac II's Toolbox read-only memory (ROM) chips, which create the distinctive Macintosh graphic look and feel. This means that UNIX developers can port their products to the Mac II and take advantage of the Macintosh pull-down menus and buttons. (That doesn't mean that a user can launch UNIX processes just by clicking on an icon — not yet.) Apple also has simplified the task of the system administrator, a grueling job under many versions of the UNIX system, and made it hard for an ignorant user to bollix up an entire file tree with a few ill-typed words, something still

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EDITOR'S CHOICE

PC Week

NEC's SilentWriter Printer Boasts PostScript, HP LaserJet Plus Emulation

The new NEC SilentWriter LC-890 laser printer breaks new ground on several fronts. Until now, buyers of laser printers have been

NEC's LC-890 printer, however, makes that issue a moot point—and adds new meaning to the term "full featured." NEC

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possible under some versions.

Apple is doing its best to provide connectivity to systems other than its own. A/UX supports several multivendor network standards, including Ethernet, TCP/IP, Berkeley Services, NFS (an open standard from Sun Microsystems), and Yellow Pages. It will also support Version 11 of X Windows, the windowing standard from MIT. Apple's link to equipment from DEC further increases its connectivity to systems outside the Apple universe.

Apple will have to support the Posix standard when that standard is complete. While Apple has not yet said it will definitely support Posix, John Sculley has said that support for Posix would be a "logical progression" from supporting System V and Berkeley UNIX.

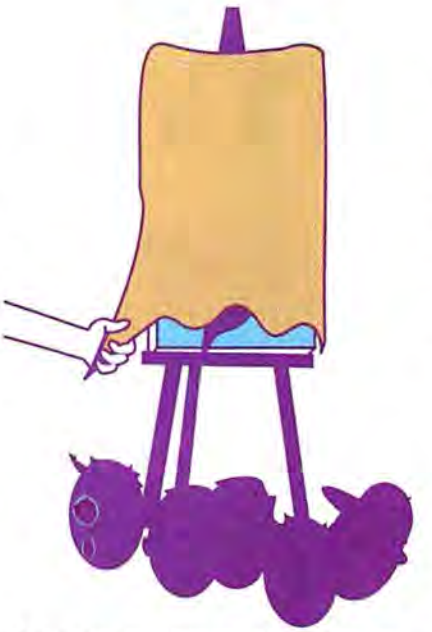
WHY MOVE TO UNIX?

In one sense, a product like A/UX was inevitable. In fact, Apple originally tried to bring UNIX over to the Lisa. However, shortly before the Lisa was scheduled for introduction, the company decided against UNIX on the grounds that it didn't fit with the plans to market the Lisa as an office-productivity tool.

Apple is now repositioning itself as a business company, working with large- and small-scale firms, higher education, and government markets. To enter the latter two markets, UNIX is a necessity. More than 50 percent of all government contracts now specify hardware and software running under the UNIX operating system.

Government and defense contracts, you may recall, are a huge potential source of income. Apple has opened the obligatory Washington, DC office and has already won a couple of contracts with the Mac II, notably a five-year, $2.5-million contract for Mac IIs at the headquarters of the National Aeronautics and Space Administration.

The availability of A/UX on the Mac II signals a major turnaround in Apple's business direction. The company may not quite have a grip on how to move in this new direction —



for instance, though the system was purportedly shipping in February, classes for dealers reportedly didn't begin until the middle of April — but at this point it couldn't back out if it wanted to. The potential effect on the UNIX community is huge.

Sculley also says that he hopes this offering will entice third-party developers back into the fold, after some slipped away to write software for other operating systems. "Apple has won back many third-party developers who had left Apple to work on DOS products," he said. "That's a good sign. These developers have to choose carefully where to place their bets."

GETTING SOFTWARE ON SHELVES

Apple originally planned to announce A/UX with software shipping or about to ship from 100 vendors. What Apple got was about 50 products from 25 vendors, and it doesn't expect to reach the century mark until late in the second quarter. Glen Fiance, A/UX software evangelist, says the reason software development has been slow is that "people are realizing that they can't stop at a character-oriented user interface. It's taking a little longer to add a Mac-style interface to the product."

Because UNIX started life in a character-oriented environment, most UNIX products have a character-oriented interface, since adding the Mac interface can add one to six months of development time. Most development activity for A/UX has been in databases, office automation, developer tools (including compilers), engineering and science software, and peripheral devices. Many developers have specifically targeted the government, and several announcements are scheduled for the August UniForum show in Washington, DC, a show aimed at government markets.

One of the most surprising absences so far in the A/UX software lineup has been HyperCard. HyperCard's internal construction is such that the application seriously conflicts with A/UX in terms of memory management and event handling: HyperCard does its own work in both these areas. However, Apple is working on this problem.

Apple estimates that up to one-fourth of its business in VAR (value-added reseller) channels in the next year will be A/UX-based. They hope A/UX will give VARs a chance to move into new markets, either from the Macintosh operating system to UNIX or vice versa. Apple says that UNIX VARs that work with other major UNIX vendors, such as Altos Computer, NCR, and AT&T, are starting to come to them.

What's New for A/UX?

Note: Items in this section are announcements of new products only, rather than reviews, and unless otherwise specified the author has not viewed them in action.

One of the first requirements for the Mac II to be able to run well with multiple users under A/UX was either a change of processor from the 68020 to the 68030, or a 68030 accelerator card — and the latter is now available from MacPeak of Austin, TX.

MacPeak claims that their 68030 card will increase the Macintosh II's performance from two to three times. The base configuration runs at 20 MHz with 256K of static RAM cache (which is configurable up to 1 megabyte), with zero wait

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2 *After being cut from its background, a skyscraper is added. A false bottom is created with simple retouching.*

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4 *Using brightness and contrast controls, dramatic clouds are salvaged from an underexposed original and then pasted into the background.*

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SOFTWARE

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states. The card will have optimized settings for A/UX graphics and math-intensive applications.

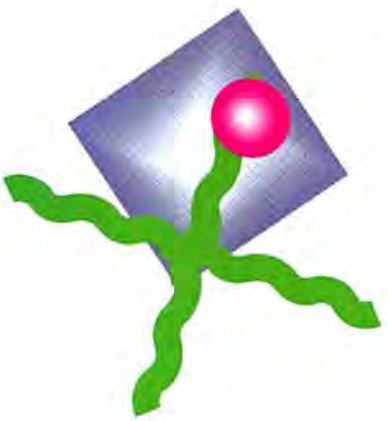
This 68030 card will make it possible for three to four users to work on a Mac II simultaneously. The price for the base configuration of the 20-MHz 68030 accelerator card with 256K static RAM is $3,495. A 1-megabyte static card and a 68882 math coprocessor are optional. For more information, contact MacPeak at 1201 Spyglass, Austin, TX 78746 or call them at (512) 327-3211.

The second wave of A/UX applications includes one of the first new integrated UNIX office-systems packages to have shown up in a long time. Decathlon Data Systems of Boulder, CO, has launched an A/UX version of its GoldMedal office automation package, which it's trying to position as "the first hardware-independent suite of office automation products." GoldMedal is also available for MS-DOS machines and will eventually be available on standard operating systems, mainframes, and more exotic proprietary systems. The package includes a word processor, a spreadsheet, communications with electronic mail, a relational database, presentation graphics, a series of desk tools (including a calendar, calculator, to-do lists, tickler file, and a phone book), and a customization module that lets users shape the system to their own needs, perhaps using other vertical modules that Decathlon has available.

Foreign language versions of GoldMedal, as well as vertical-market versions for medical, legal, scientific/technical, and manufacturing applications, will be available later in the year. The base price for the A/UX version is $695; the final price depends on the number of users. For more information, contact Decathlon Data Systems at 1650 38th Street, Boulder, CO 80301 or call (303) 440-9000.

Grasshopper Group, a San Francisco-based startup, is offering an A/UX version of the Sun Microsystems windowing system NeWS — that's pronounced "Nee-wuss," by the way. Grasshopper's version of NeWS, called MacNews, brings a PostScript-based interface to the Mac II.

> Today, 10 percent of all computers worldwide run some form of the UNIX operating system. By 1991, it is estimated that 22 percent of computers will do so.



The MacNews program provides a common user interface for applications running locally on a Macintosh II or on any computer connected to a Mac II through a TCP/IP network. The user interface is written in PostScript. Because the full source code is included with this version, users can customize the interface or copy parts of it into their application code. The C-language source code is also included in the distribution disks, so it can be compiled into applications on any UNIX machine. Users configure their windows with a variety of pull-right menus. Screen output is designed in PostScript, so it can be fully scaled, rotated, or masked without changing applications. MacNews lets users run compute-bound applications, such as computer-aided designs of a molecular model, on a faster machine while the display is controlled from and viewed on a Mac II.

Release 1.1.0 of MacNews is surprisingly inexpensive at $225, which includes a manual, program disks, interface source, and (for the first release) a free upgrade. For more information, contact the Grasshopper Group at 212 Clayton Street, San Francisco, CA 94117 or call (415) 668-5998.

WHAT THE ANALYSTS THINK

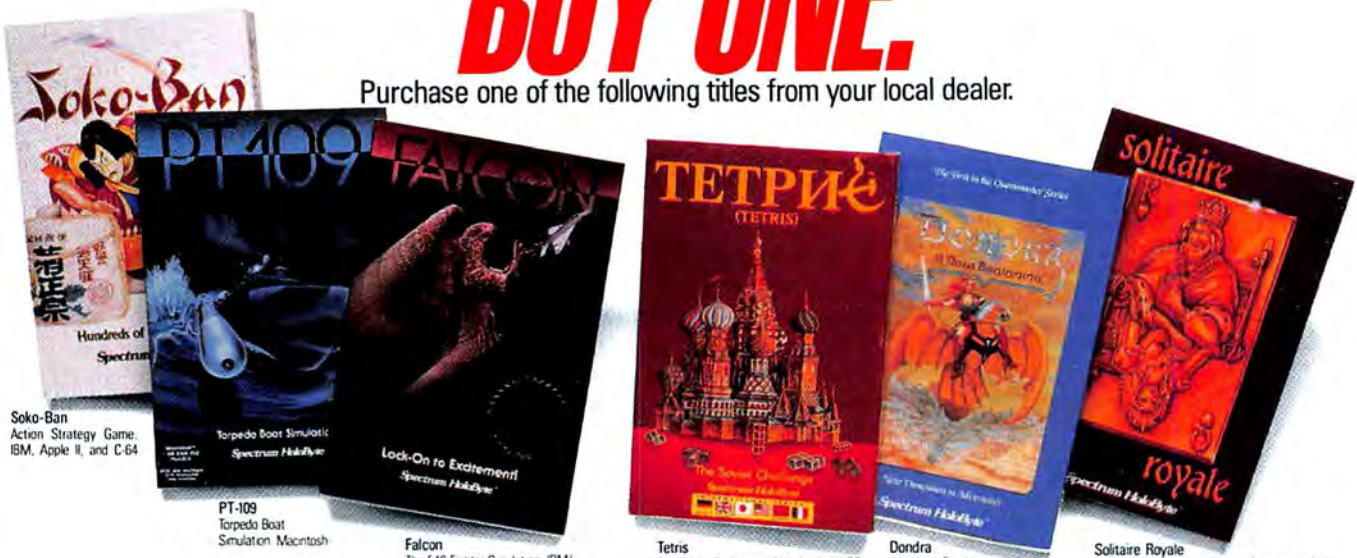
Undeniably, the Macintosh II is gaining wide acceptance. According to Brian Boyle, director of research at Novon Research Group, there will be more Mac IIs installed by the end of the year than any other UNIX machine. He also predicts that many of those users will take A/UX immediately — this assumes that they've gotten a clear picture of it from their dealers or distributors.

Will A/UX also gain wide acceptance? Paul Cubbage of Dataquest waxes enthusiastic: "The three things I find wrong with UNIX are file systems that don't handle large files, system administration that requires too high-level a person, and a low-level user interface. Apple has implemented A/UX to have it run with a hardened file system, a greatly simplified system administration task, and an intuitive user interface. The very things I see as UNIX weaknesses, Apple has made strengths."

It remains to be seen whether Apple is ready for the market position it's jockeying for. The prognosis at this point is favorable. Should the software appear, Apple's chances are good for really giving business and technical users "the operating system for the rest of us."

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TIP SHEET

COMPILED BY GREGORY WASSON

Found a trick, short cut, or smarter way to get something done with a program? Share your hints by sending them to The Tip Sheet c/o *MacUser*, 950 Tower Lane, 18th floor, Foster City, CA 94404. We pay at least $25 for every hint we publish, plus we'll print your name and hometown.

Every month we'll select one tip as the Tip of the Month. The person who sends in that tip will receive $100 for it.

HYPERCARD

The HyperCard printing options allow only the printing of the current card or the entire stack. But if you create a button on any card of your stack with the following script, you'll be able to print a range of cards that you specify.

```
on mouseUp
  ask "First Card to Print?
  Put It into Start
  ask "Last Card to Print?
  Put It into Finish
  open printing with dialog
  repeat with counter = start to finish
  print card counter
  end repeat
  close printing
  end mouseUp
```

DAVE ELWOOD
SHERMAN OAKS, CA

The February 88 issue contained a tip on reducing the size of your HyperCard stacks by adding a script to any stack's background. The following is more efficient and concise:

```
on closeStack
  if the freeSize of this stack)0 then doMenu Compact Stack
end closeStack
```

MIREL LIVIU SLAVUTEANU
HELSINKI, FINLAND

HyperCard and the MacPuke INIT both use the same type of snd resources. To install the latter in a stack, launch ResEdit and open the MacPuke INIT file. You'll find that it has one snd resource called "Eject Sound." Copy this over to the snd file on HyperCard and you will be able to play the puking sound just as you would "boing" and harpsichord.

JADE PROUT
CAPE ELIZABETH, ME

ADOBE ILLUSTRATOR

Here's a cunning way to Undo an accidental Move if you've clicked the mouse button and Undo Move is no longer available. First, make sure the same anchor points are still selected. Select the object if they're not. Now hold Option down as you click the Pointer Tool. The Move dialog box appears, showing a positive value beside "Move distance." This value represents the distance in points of the *last move made*. All you have to do is make that value *negative* (insert a minus sign), and click OK. Your anchor points will slink back to their proper place just like the dogs they are.

BILL PLANEY
FT. WORTH, TX

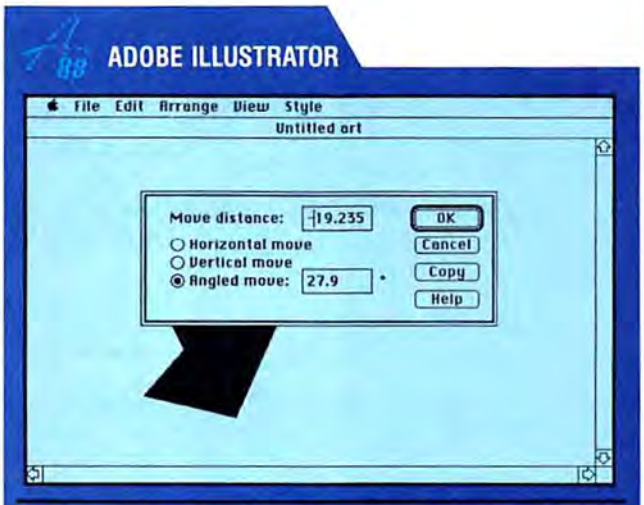
The Adobe Illustrator manual states that the current art file cannot be edited in the Preview mode. This is not entirely true. Objects can be moved and copied in the Preview mode by using the Move dialog box. Select the object you want to move or copy, enter the Preview mode, call up the Move dialog box (hold down the Option key and click the Pointer tool in the toolbox), enter the distance and/or angle data for the operation, then click OK (or Copy). The object will move or duplicate before your eyes, and you'll be able to see how this adjustment will affect your printed copy. This trick is very useful in making changes to aspects of the illustration that can be seen only during Preview.

W. SANFORD MAY
DALLAS, TX

FILEMAKER

We use FileMaker extensively for our personalized mailings. Our job is easier if we type the letter directly in a FileMaker layout rather than fooling around with Word. Unfortunately, we are not able to fully justify the letter — which would result in a more professional-looking document for the client.

A way to overcome this is to type the letter in Word with the justified text icon selected from the ruler, select the body of the letter, and press Command Option D, which turns the text into a graphic. The graphic can then be pasted into the FileMaker layout.



Adobe Illustrator's Move dialog box allows you to undo moves when the menu command Undo Move is not available. Simply insert a minus sign before the number in "Move distance" — your graphic pops back into place.



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ED ROBINSON
SCARBOROUGH, ONTARIO, CANADA

PAGEMAKER 3.0

PageMaker saves updates to your print parameters (such as Paper Source, Driver, Scaling, and so on) *only* if it perceives you have changed the file. Even though you may be opening the file only to print it, your changed parameters will be lost if you close it. A crude but effective solution is to do something and promptly Undo it, or draw a box and delete it. Now PageMaker will perceive a savable change, and your new print parameters will be saved with the file.

BILL PLANEY
FT. WORTH, TX

READY, SET, GO! 4.0

There is a quick and easy way to stretch text as tall or as wide as you wish.

Start with a text block and type in the desired text. Then draw out a picture block to the size of the end product — if, for example, the text is to come out half as wide and four times the height, make the picture block that size.

Select (click on) the text block to be stretched. Cut or copy it. Then ready the picture block as if it were to receive clip art and paste the text into the block. Select the Picture block, choose Specifications (Command-M), and use the Scale Across and Scale Down functions to stretch

TIP OF THE MONTH

WORD 3.0x

The Macintosh and the Apple ImageWriter together can produce good near-letter-quality text, but at a rather sedentary pace. The ImageWriter itself has several resident fonts that it could print at a much faster speed, but these are not normally accessed by word processors, such as Microsoft's Word.

However, by using the Print Merge function, these resident fonts can be integrated into Microsoft Word documents in a very simple manner.

First, create a data file containing the necessary printer codes. For example, to print in the ImageWriter's near-letter-quality pica font, create a document containing the following two lines:

```
lq
ea2eN
```

The first line, lq, is the header record. The letter *e* temporarily represents the escape character; ea2 is the ImageWriter code for near-letter-quality text, while eN is the code for pica.

Save the file as a Text Only file using the filename "codes." Next the letter *e* must be changed to the escape character (1B in hexidecimal notation).

This can be done with MacTools or any other byte-level editor (see illustration).

The first line of the document to be printed would then basically be a template in which to insert the printer codes and would then appear as follows (remember that the delimiters << and >> are accessed by Option \ and Shift-Option \):

```
<<DATA      codes>>
<<lq>>
```



Using MacTools, you can edit your Word data record to replace e with the hex code for the escape character. Here the first e has already been converted. The second (highlighted) e is about to be changed.

To ensure compatibility of appearance between the document on-screen and in the printed version, use a monospaced typeface such as Courier when typing the document.

To print the document, first make sure that the serial printer driver is selected (the ImageWriter driver will not pass through the escape character) and that the Typewriter printer resource is located in the System folder.

Next, Choose the Print Merge command. Then as the file is sent to the printer, the ImageWriter codes for the near-letter-quality pica text are sent to the printer just ahead of the document text.

Printing is speeded up considerably because the burden of converting text into near-letter-quality output is assumed by hardware in the ImageWriter printer rather than by software in the Macintosh.

The Typewriter printer driver interprets simple styles such as bold and underlining.

Other enhancements, including other resident ImageWriter typefaces such as elite, compressed, and expanded type, and italics, can be accessed by including additional fields in the data field.

Consult the ImageWriter manual for a more complete listing of the various escape codes.

DANIEL GUTMAN
NEW YORK, NY

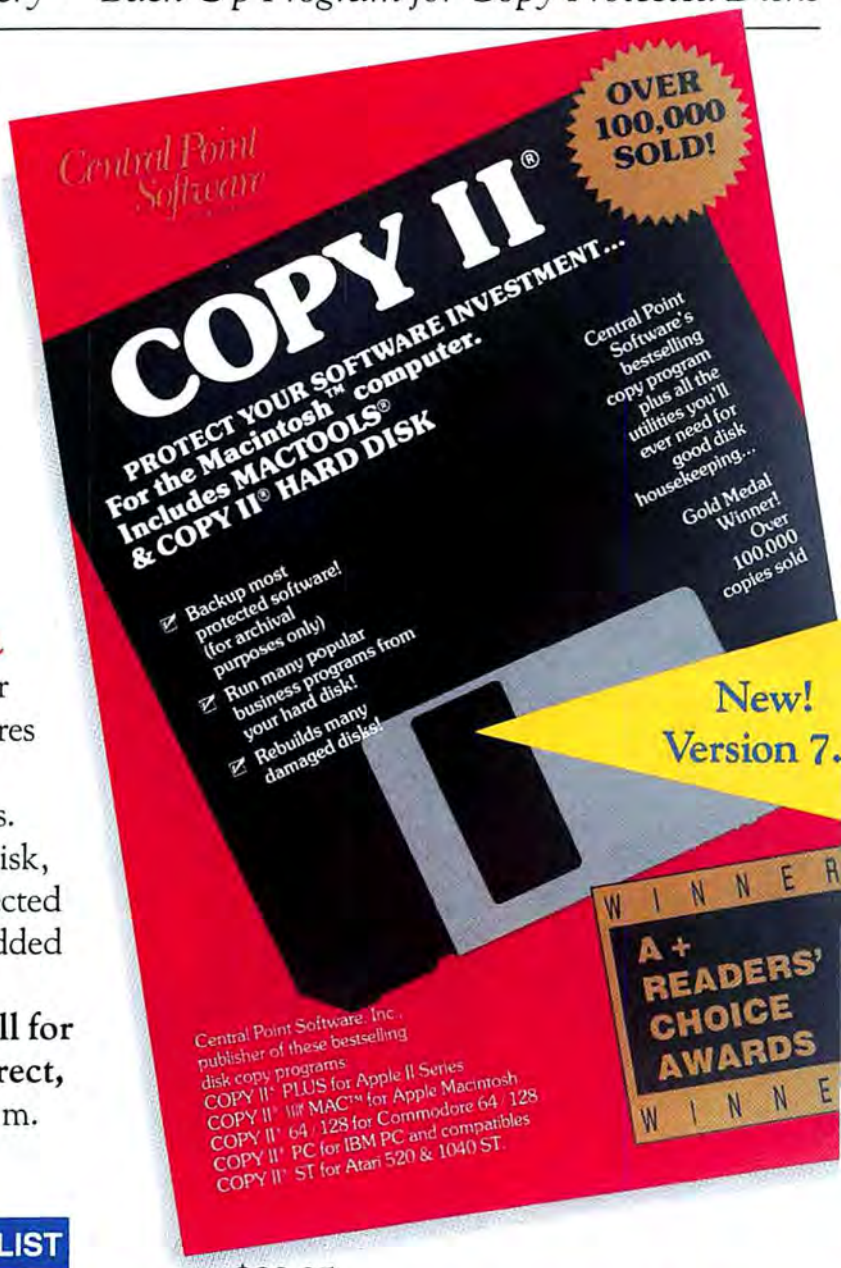
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5	15	**Turbo Pascal** · Borland International · (APL,MAC)
6	14	**Superspool** · Supermac Software · (MAC)
7	4	**Business Class** · Activision · (APL)
8	13	**Fastback** · Fifth Generation Systems · (MAC)
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the text accordingly. The distorted text will appear on-screen.

DANIEL F. CHAN
LOS ANGELES, CA

CRICKET DRAW 1.1

Cricket Draw 1.1 has a bug that was not present in 1.0. If you construct a two-sided open polygon and add an arrowhead to the end, the arrowhead appears correctly on the screen (see Figure A) but prints out at the intersection of the two line segments (Figure B). Figure C shows the obvious method of creating a two-sided polygon. Unfortunately, this results in what is shown in Figure B.

Figure D shows the workaround. You just add an extra clickpoint to the polygon. This results in the arrowhead being positioned where it should. Why this works, nobody knows, but it does — every time.

VINCE SWANSON
BELMONT, CA

WORD 3.0x

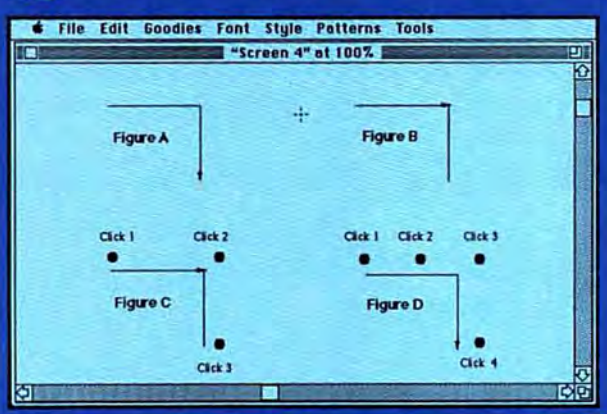
When working in Microsoft Word, I often use several different document disks during a session.

And like many people, I usually double-click on a document to open it (rather than opening Microsoft Word first). The problem was this: When I wanted to work on a file from document disk 2, I would eject disk 1, insert disk 2, and open the file. But when I tried to save the file on the second disk, the Macintosh would tell me to keep swapping disks 1 and 2 — a very frustrating and annoying procedure.

The answer to all this is that, if you're working with a floppy-based system, open Word first, and *then* open your files *within* the program under the File menu. Then you can eject and insert new document disks without any inconvenience.

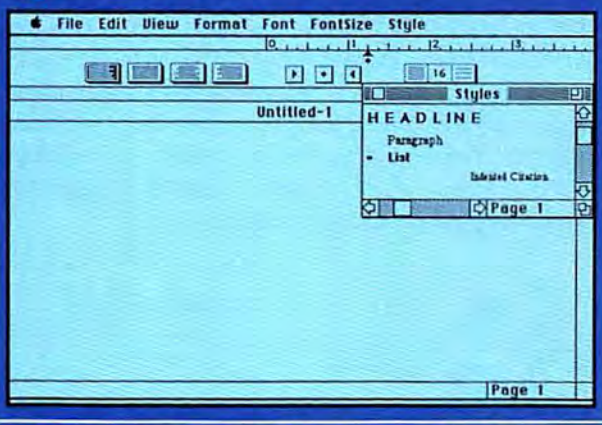
DENNIS TAYLOR
CONCORD, MA

CRICKET DRAW 1.1



Cricket Draw 1.1 has its fair share of bugs. This one involves two-sided open polygons and a roving arrowhead.

WRITENOW



Style sheets, after a fashion, can be put together in WriteNow by saving typical paragraphs in a separate document. When needed, they can be copied into a document with WriteNow's Copy/Paste Ruler command.

It's possible to copy one or just a few styles from one Word document's style sheet to another without bringing in the entire style sheet. First, open the document that has the style(s) you want to copy. Select a paragraph that's formatted in the desired style. Or to copy several styles, copy a series of paragraphs. Now open the document to which you want to copy the styles and paste the paragraphs. The new styles will appear in the style sheet. You can now delete the text you pasted, and the style(s) will remain. This is a great improvement over bringing in an entire style sheet and then cutting unwanted styles one at a time.

KIRSTEN ROBINSON
PROVIDENCE, RI

WRITENOW

You can set up "style sheets" after a fashion in WriteNow. Set up the dummy formats that you frequently use in a separate document and keep this document open all the time.

When you need a style, just switch windows, click on the paragraph that has the format you need, and copy the ruler (Command-1).

Switch back to the document window and paste the ruler in (Command-2). Although this method copies only ruler settings (Font, style, etc., do not carry over), it can be a real time-saver and guarantees that your finished document will have a consistent look.

Later, if you want to change a particular format — for instance, making your centered headings all flush left — you can use WriteNow's identical ruler feature.

You select the text from the first occurrence of the format to the end of the document, and hold down the Shift key while making the change in this ruler.

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HYPER SPACE

Although the hyper-hoopla has dissipated, HyperCard remains one of the most significant software applications developed for the Macintosh. Its impact is as varied and broad-ranging as Mac users themselves. The diversity of HyperCard's potential is exciting and has made quality editorial coverage a challenge.

***MacUser* responded initially with introductory HyperCard features, and next with the monthly section "Flash Cards," to keep track of the most exciting stackware we've seen. We then followed with Michael Swaine's "Card Tricks," a monthly column devoted to HyperTalk techniques.**

This month we introduce a new section specifically for HyperCard. You'll find Hyperspace in every issue, with a variety of HyperCard information, including "Card Tricks" and "FlashCards."

With the release of HyperCard 1.2 (actually, make that 1.21., following Apple's latest bug fix), we have an evolving software tool that provides much that was missing from the original version. The most important of these new Apple-supplied features is the ability to handle stacks read from CD-ROM disks. But perhaps even more exciting is the growing library of user-supplied features available for HyperCard, in the form of HyperTalk scripts, XCMDs, and XFCNs. Even the most humble contribution bears witness to a modern phenomenon: a powerful focus of various minds and perspectives, working independently — yet collectively — toward a definition of a shared, visual programming environment.

Whether HyperCard is best described as an information presentation tool, database, programming language, knowledge navigator, custom application builder, revolutionary educational tool, or new art form is something you'll have to decide for yourself. But we'll take the liberty of telling you that outside of any and all of these descriptions, there is something more.

And so welcome to Hyperspace!

The Look and Feel of Hyperspace

BY STEPHEN ELIAS

In the early days of the personal computer revolution, commercial success was possible for all sorts of homegrown software. By 1986, however, the concept of the "little guy" programmer was pretty much dead; the road to software stardom mostly lay in the direction of large software publishers rather than garage workshops.

And then came HyperCard. Quite simply, HyperCard is a software development tool for the masses. Take the case of Arnold, who wants to catalog his large science-fiction collection according to such key concepts as hyperdrive, cryonics, telepathy, teleportation, antigravity, and robotics. First, Arnold must manually digest his collection by desired concepts. Then, he can use HyperCard to:

- design his screens (called cards) with the HyperCard paint tools and other design tools
- combine some predefined commands with appropriate icons and buttons to make linkages
- enter the necessary text (which might be one-sentence summaries of how and where each key concept is used in each book).

Voilà, Arnold has a program (called stackware in HyperCard) that allows him (or anyone) to quickly make a conceptual search of his entire science-fiction "database." If Arnold uses HyperTalk to write his own scripts (HyperTalk, the HyperCard programming language, is straightforward enough for most Mac users), he can adorn his stackware with any number of bells and whistles.

It is easy to envision many types of HyperCard programs that would be excellent candidates for wide commercial distribution to Mac users. Legal, automobile-repair, gardening, and medical-diagnosis stacks come to mind. Even Arnold's science-fiction catalog would probably do well. Also, HyperCard provides an excellent way for businesses to map and capture internal information systems so that data can quickly be imparted to and retrieved by personnel according to their individualized needs.

As wondrous as HyperCard is, it still takes much human perspiration (as well as at least a touch of inspiration) to produce an effective application. Inevitably the question arises, "How can I prevent others from copying and profiting from my stackware?" The answer is found primarily in the copyright laws. This article is about the application of these laws to HyperCard products.

First things first. The federal copyright statutes protect original works of authorship that are contained in tangible media of



expression. This protection gives the copyright owner the right to prevent others from copying, displaying, distributing, or preparing variations of the work covered by the copyright. Copyright has been held by one or more courts to protect the following aspects of computer software:

- source code (program code as written by the programmer)
- object code (the code as read by the computer after the source code has been interpreted or compiled)
- code contained in read-only memory chips (ROMs)
- operating systems
- computer game screens
- screen formats used by application programs.

The Look and Feel of Hyperspace

Who owns the copyright in software? The programmer does, except in the following two instances:

- If the program is developed by an employee as a part of his or her employment, the employer owns the copyright.
- If a program is developed under a written work-made-for-hire agreement, the copyright will normally (but not necessarily) be owned by the commissioner of the work.

Part or all of this ownership can be transferred to others. For instance, it is typical for programmer-authors to transfer to their publishers "all copyright rights for the life of the copyright" as a condition to receiving royalties on sales of the program covered by the copyright.

If the original owner of the software is the programmer, the copyright lasts for the programmer's life, plus 50 years. If the original owner is an employer or commissioner of the work, the copyright lasts for either 75 or 100 years, depending on when the work is published. In short, copyrights last a long time, regardless of who owns them.

Now that I've covered a few copyright basics, let's turn to a specific discussion of how copyright can be used to protect HyperCard stackware. When I say that HyperCard stackware may be protected by copyright, I am really talking about some or all of the following stackware attributes:

- the source code (the HyperTalk commands and scripts which make the stack work)
- the structure, sequence, and organization of your database, that is, the connections you build between cards and stacks to facilitate information retrieval)
- the text that is typed or imported into your stack (assuming you are its author)
- the artistic nature of your cards created with the paint program
- the look and feel of the text-based cards that make up your HyperCard stack

Clearly, a HyperCard product is a multiheaded beast when we start talking about copyright protection. Let's discuss each item in order.

PROGRAM CODE (SOURCE CODE)

One important aspect of your HyperCard stackware that can be protected under the copyright laws is its source code (the HyperTalk commands and scripts that make the stackware work). Traditionally, it has been necessary for a human being to write code to make programs operate. At the advanced HyperCard level, this is still true. The way you use HyperTalk to write scripts for your stackware can be very creative indeed, and certainly worth protecting under the copyright laws the same as any other type of source code. Not only will your scripts be protected against literal copying but also the overall structure, sequence, and organization of your stackware code will be protected against appropriation by others under a recent federal circuit court of appeals case [Whelan, Inc. v. Jaslow Dental Laboratory, Inc., 797 F.2d 1222 (3d Cir. 1986)].

Suppose, however, that you don't bother to learn HyperTalk, but instead rely exclusively on HyperCard's existing subroutines by simply cutting and pasting buttons on the screen, or clicking on commands in HyperCard dialog boxes. In this instance, it is debatable whether the source code you necessarily produce by manipulating these tools is copyrightable. On the one hand, it's a little difficult to call your efforts a "creative work of authorship" (at least as far as creating the code is concerned). On the other hand, that you produced the code by manipulating symbols on screen doesn't necessarily disqualify the code from copyright protection. I would consider it protectable; you have nothing to lose by trying.

STRUCTURE, SEQUENCE, AND ORGANIZATION OF "HYPERSPACE"

In addition to your source code, the configuration of your stackware's hyperspace should also qualify for copyright protection under the Whelan case. Hyperspace? This is a term that has been used to describe the conceptual environment traveled in by users of HyperCard stackware. It is based on the science-fiction construct under which star ships travel faster than light by using warps (ripples) in the space-time continuum. In fact, the beauty of a well-constructed HyperCard program is that it permits wild, intuitive, and immediate leaps across a body of information on a strictly "as desired" basis. In many instances, the main creative aspect of stackware will be this "hyperspace" information-accessing environment.

If the original owner of the software is the programmer, the copyright lasts for the programmer's life, plus 50 years. If the original owner is an employer or commissioner of the work, the copyright lasts for either 75 or 100 years.

Despite the flashy nature of the term *hyperspace,* we're really talking about a highly interactive database. Databases (as compilations of data) have long been protected by copyright on the basis of the efforts and creativity that went into organizing the data for meaningful retrieval. Although on one level the linkages you build between cards and stacks are ideas (which as we see below are

not protected by copyright), the purpose of the links is to facilitate access to information in the cards and stacks according to the specific needs of the user. And, since there are many ways to design these links, the structure, sequence, and organization of your stackware should be protectable by copyright, even though the closest case on this point (Whelan) dealt with the structure, sequence, and organization of source code rather than a database.

TEXT THAT IS TYPED OR IMPORTED

If your HyperCard stack contains text (such as Arnold's digest summaries in the science-fiction example), the text itself is copyrightable as a literary work, assuming that you authored it. If, on the other hand, your text merely consists of facts (the names of all cities and counties in the U.S., for example), or an expression that is in the public domain (works that were published without a copyright notice or works in which the copyright has expired) there is no copyright protection.

In many cases, the text you use in your HyperCard stack will in fact be covered by copyright, but someone else will own it. If, for instance, Arnold copied actual entries from his science-fiction collection into his Science Fiction Catalog stack, he would have to get permission from the authors before he could distribute his catalog. Once this permission is obtained, however, the overall way you organize the text can be protected by a separate copyright.

THE AUDIOVISUAL NATURE OF STACKWARE

Some of the first cases that applied copyright principles to computer software dealt with computer game screens. The issue in these cases was whether the game screens themselves were protected by the copyright in the underlying code, or whether they were separately protected as audiovisual works (meaning works with a related series of images, like movies). Because of the graphic nature of the game screens, and because these same graphics could be created by different underlying programs, the courts ruled them to be audiovisual works, entitled to copyright protection in their own right.

Under this approach, your stackware's visual user interface (the design of its cards) may qualify as an audiovisual work if it is sufficiently artistic. Conversely, under Copyright Office rules, your cards will not qualify as an audiovisual work if they rely primarily on text to get their messages across. And, under these same rules, text-based cards will not be recognized by the U.S. Copyright Office as being entitled to copyright protection separate from the code that produces them (the Copyright Office is currently reviewing this policy).

Despite the current position of the Copyright Office on text-based screens, all is not lost if your stackware cards fail to qualify as an audiovisual work. This is where the concept of "look and feel" enters the picture.

"LOOK AND FEEL"—THE HYPERCARD USER INTERFACE

A number of mass-market successes (such as Lotus 1-2-3, MacPaint, and The Print Shop) employ distinctive screen formats (termed the *user interface*) that typically include combinations of such attributes as commands, graphics, sounds, symbols, sequences, arrangements, and various aesthetic touches. Clearly, competitors who decide to employ these same user interfaces can piggyback their products on the marketing success of the originals and make a hunk of change in the process. And competitors there are. Total or partial copies of various user interfaces have appeared in record time. And just as promptly the owners of The Print Shop (Broderbund), Lotus 1-2-3 (Lotus Corp.), and now the Macintosh (Apple) have sued the "clone makers" for copyright infringement.

The big question presented in these cases is whether the layout of a computer application screen can qualify for protection under the copyright laws. Earlier cases have held that typical text-based forms don't qualify. And the companies being sued in the current cases argue that screen layouts are really nothing but glorified forms that set forth ideas rather than the expression of ideas. It's true that the copyright laws only protect how you say something and not what you say. But it's very difficult to tell whether a given application screen is a collection of ideas, or an expression of ideas. Normally, if there's more than one way to accomplish the same function, the item on the screen is considered an expression. Otherwise, the expression is said to merge with the idea and not be protected by copyright.

Some of the first cases that applied copyright principles to computer software dealt with computer game screens. The issue was whether the game screens themselves were protected by the copyright in the underlying code, or whether they were separately protected as audiovisual works.



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The Look and Feel of Hyperspace

In Broderbund Software, Inc. v. Unison World Inc., 648 F.Supp. 449 (N.D. Cal 1986), the U.S. District Court ruled that the Print Shop screen layout qualified as protectable expression and that the clone's screens could be held to have impermissibly copied the look and feel of the original. In other words, the court ruled that copyright protection can extend to the overall appearance of an application screen, not just its literal attributes. However, instead of deciding that the screens are entitled to separate copyright protection under the audiovisual approach, the court ruled that protection must come from the copyright in the underlying code. This position has been rejected by another U.S. District Court in Digital Communications v. Softklone, 659 F.Supp. 449 (N.D. Ga 1986), which held the "status screen" of the Crosstalk XVI communications program to be a copyrightable expression protected not by the copyright in the underlying program but separately protectable as a compilation (a species of literary work).

The most recent example of the idea/expression dichotomy is provided by the hottest copyright question currently playing on the software law circuit: Do the Macintosh desktop and window displays consist of ideas (pull-down menus, trash cans, and so forth) or copyrightable expression? Apple has sued Microsoft, Hewlett-Packard, and others to have this question answered. If past cases are a guide, the Mac screen displays will be ruled expressions (which means Apple will win) if the court can determine there are other possible approaches to implementing the functions carried out by the displays. If, on the other hand, the court decides that the features of the Mac displays are essential to the functions performed by them, Apple will probably lose. Of course, if the case is settled, as many in the software business devoutly hope, we will have no decision at all.

How do these look-and-feel cases bear on HyperCard stackware? Simply, the potential for creative diversity in the appearance of any given stack (made possible by the paint program and HyperCard's other tools) will almost certainly qualify the cards in the stack to copyright protection. And, since it is clear that the look and feel of stackware cards is mostly produced by a manipulation of predefined symbols and use of the paint program rather than by way of HyperTalk source code, the cards should separately qualify for copyright protection. As I mention below, however, the U.S. Copyright Office may disagree.

HOW TO PROTECT STACKWARE

How do you obtain copyright protection for your stackware? There are three levels of protection. The initial level comes at the moment you produce your stackware. It is automatically covered by copyright. The second level comes when you publish (release for distribution) your stackware. At this time, to continue your copyright protection, you should place a copyright "bug" on your introductory or home card, on the disk label, and on the title page of any documentation that you prepare to accompany your stackware. The copyright bug should have the word "Copyright," a small *c* in a circle (©), the copyright owner's name, and the year it is released for distribution. For example, the copyright bug for this article would read: Copyright © 1988 by Stephen R. Elias. If you want to be extra thorough, you can also add "All Rights Reserved." (This is necessary for protection in two South American countries.)

To obtain the third level of protection, register printouts of the following items with the U.S. Copyright Office:

- the source code (HyperCard scripts)
- selections from the stackware that demonstrate its database structure
- the text entered or imported into the database (protection may be obtained for your arrangement of the text and for text that you author)
- the stackware cards (either as audiovisual works or as compilations)

The U.S. Copyright office may refuse to register your cards under its current policy (even though they clearly are not protected through your HyperTalk source code), but you have nothing to lose by trying. Further guidance on all aspects of copyright protection for software is available in *How to Copyright Software* by M.J. Salone (Berkeley, CA: Nolo Press, *1987*).

Whether HyperCard applications are developed for internal use by a business, or for mass distribution, HyperCard clearly is causing the rebirth of "little guy" programming. This will result in the dissemination of thousands of functional information systems to the Macintosh-owning public, which will in turn greatly narrow the information gap between experts and the lay public. It is to be hoped that the availability of copyright protection for the many creative aspects of stackware will help speed this result.

> Your stackware's visual user interface (i.e., the design of its cards) may qualify as an audiovisual work if it is sufficiently artistic.

STEPHEN ELIAS IS AN ATTORNEY, CO-AUTHOR OF LEGAL CARE FOR SOFTWARE, AND AUTHOR OF INTELLECTUAL PROPERTY LAW DICTIONARY, BOTH PUBLISHED BY NOLO PRESS (BERKELEY, CALIFORNIA).

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by Michael Swaine

The Art of Gesturing

This month I'll share some reader feedback on the first columns, discuss the art of creating gestures in HyperTalk, and present several HyperTalk scripts, including one that uses a single new gesture to invoke the script editor on any object, alter any object property, or discard any object.

Greg Ruffell of Victoria, B.C., found the only error I know of in the stack analyzer published in May: a failure to initialize two variables. The typical symptom is a warning message that a field is too large, and the fix is to insert `put empty into theScripts` and `put empty into analysis` into the initialization section. Greg also augmented the stack analyzer to report the rectangle sizes of buttons and fields and made some other improvements.

Alex Mead of Denver made some worthy improvements in the program as well. Van Dashner of Washington, D.C., implemented the stack analyzer cleanly and uploaded it to MacNET. Although the program is being used effectively, some readers have reported problems that I haven't been able to replicate, so there are probably other hidden bugs. One tip: If it doesn't seem to understand the name of your stack, put quotes around the name when you enter it.

Jon Pugh of Livermore, CA, took up my June challenge to put an Edit button on every card of every stack. His script, which creates a pseudobutton on every card, wins the no-prize. Jon also reminded me about Ted Kaehler's widely available edit script, which opens the script editor on an object in response to a new gesture — a rubbing of the object as though it were Aladdin's lamp. John Nicholas of Clarendon Hills, IL, sent a succinct edit script that has point-and-shoot appeal. My versions of Jon's and John's scripts appear at the end of this column. Joe Lewis Wilkins of Escondido, CA, sent in an edit script approach that is part of a carefully worked out "HyperFace" — Joe's term for the structured way in which he interprets mouse clicks and modifier key actions.



Both Kaehler's gesture and Joe Wilkins's HyperFace point to the lack of an official semiotics of HyperCard mouse gestures. Apple is pretty specific about what mouse actions ought to mean, but, bless his innovative soul, Bill Atkinson broke some of the most fundamental of Apple's rules with HyperCard. This leaves a sort of vacuum with regard to the meanings of HyperCard mouse gestures, and who better to fill that vacuum than we creative stackheads? What nature abhors, art adores.

Let's create some gestures. Creating your own gestures is a good exercise in HyperTalk programming. It would be hard to improve on Bill Atkinson's button press for intuitive simplicity, so to create a useful new gesture you first have to think of a situation in which pressing a button is not an intuitive response. Already the task has you empathizing with the user, which is a prerequisite for excellence in programming. Gestures also have to be responsive, and this forces you into thinking about code efficiency, which can only make you a better programmer.

Here are some gestures that suggest themselves: twisting (it's the only thing to do with a knob); nudging, or pushing with inertia, so that the object pushed keeps moving after you quit pushing; reaching or gesturing beyond the card window; and the Upside Whack. I have real hope for the Upside Whack; I'm sure there must be a use in the HyperCard world for the gesture of whacking the sucker one to make it work. It's such a handy gesture in the real world. Then there is the gesture of picking up one object and touching another with it; this adds a new dimension of expressibility by letting you apply one object to another. John Nicholas's script shows what I mean.

In a moment I'll describe a new gesture that I've implemented. I have included with this month's column a script that employs the gesture to do several useful things. But first, some thoughts about creating new gestures.

There is a finite set of mouse and key actions from which you can build gestures. When you combine these actions, plus the dimension of time, you are most likely to come up with something meaningful if you think in terms of the physical aspects of real-world movement: direction, distance, speed, location (relative or absolute), acceleration (and therefore abruptness), change in direction (and therefore curvature), and direction of curvature

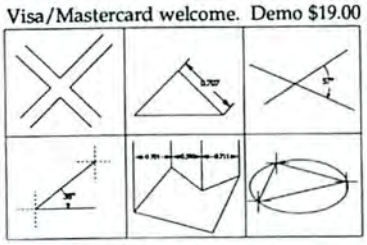


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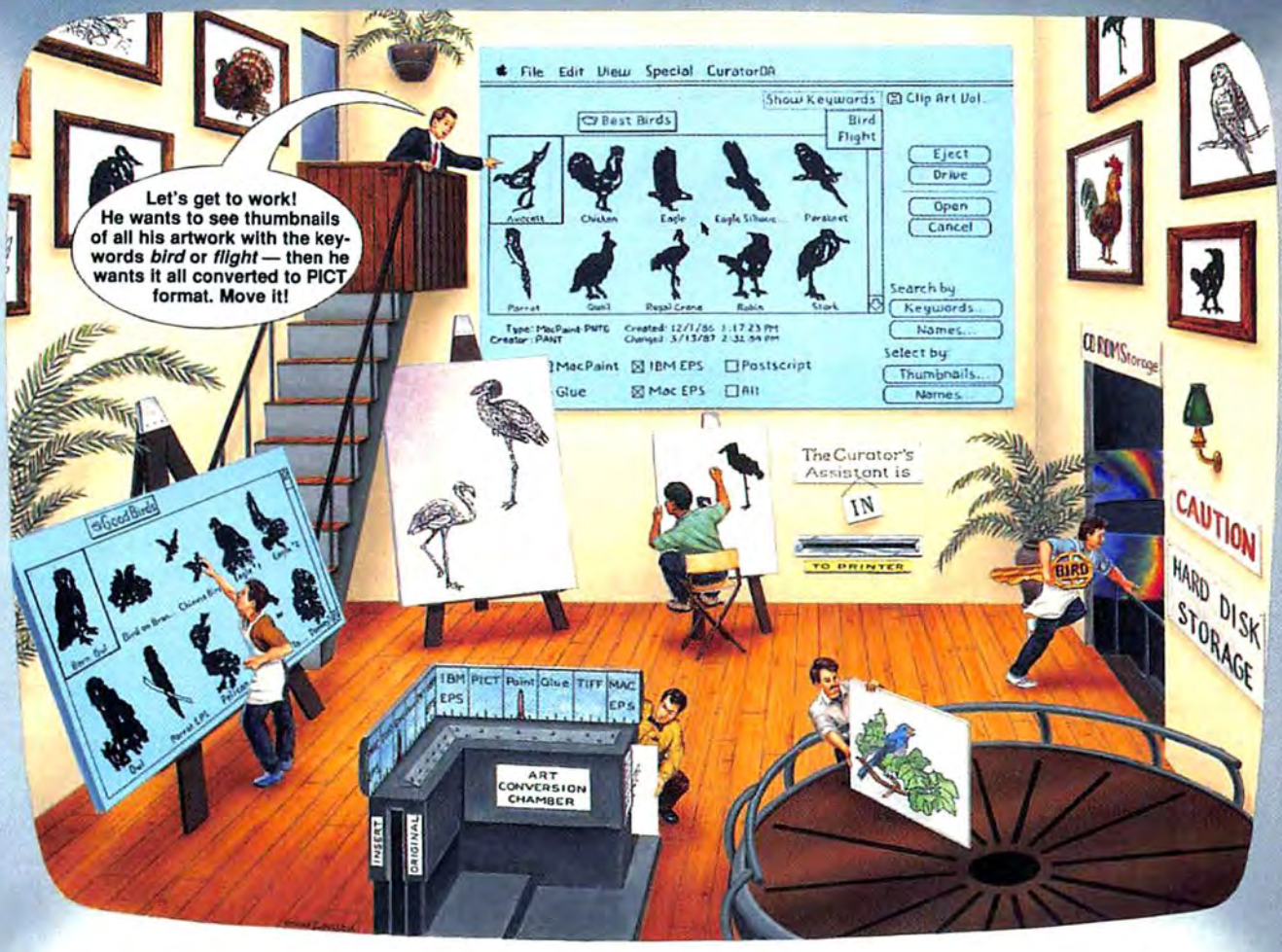
(consider using an underhand curving drag to push one object behind another, an overhand ditto to slide it over the other). Some of these may be impractical, but (if you can implement them) they have the advantage of verisimilitude. Unless your gesture has the feel of a real action on objects in the HyperCard world, it will be just an arbitrary kinesthetic code.

Some aspects of movement do not correspond to any tracked mouse or key movement, such as torque, or anything to do with twisting. As a result, you can't create a knob-rotate gesture that lets you turn a knob by twisting the mouse in one spot. You can create a knob-revolve and let the button rotate visually as you revolve the mouse around it; I've written such a knob script, and it works. It uses the movement aspects of relative position and direction of movement. But I don't think that it feels enough like twisting a knob to be usable. Other physical aspects of movement may be impractical or useless to implement. I've also written a script that responds to mouse velocity, but I don't know what to do with it, and I can't see any use at all for measuring mouse acceleration.

But it's clear that there are many useful new gestures out there to be discovered, and you should explore the territory. What any explorer wants is complete freedom of movement and a good map. One good map is the book *Apple Human Interface Guidelines: the Apple Desktop Interface*. Regarding the semantics of mouse moves in the Macintosh environment, it says, "Simply moving the mouse just moves the pointer. All other events . . . take place only when the mouse button is used. The user can do three things with the mouse button: click, press, and drag. Selecting the object of an operation before identifying the operation itself is a fundamental characteristic of the Apple Human Interface and has been referred to as . . . the 'noun-verb paradigm.' " If Atkinson can break these rules, so can you. But they are useful, well-thought-out rules. You can also reinstate them, as a couple of this month's scripts in the case of the noun-verb rule.

The script I wrote for this month

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If Atkinson can break these rules, so can you.

implements one gesture, that of waving toward something on the edge of or outside the card window. I have written it into a stack script, and the script uses the gesture to invoke the script editor, alter a property of an object, or discard an object.

To edit the script of an object once you have put this script in the stack, you click on the object (button, field, or card), hold the mouse button down, and slide the pointer to the edge of the screen near the Edit item in the menu bar (the menu bar doesn't have to be visible). To change any changeable property of an object, you do the same thing, except that you move toward the Objects menu item. A dialog ensues, asking what you want to change.

To discard an object, you use the same gesture but toss toward the trash can rather than the menu bar. (Unless you have a Macintosh II, you can't see the trash can, but you know where it is, right? It's down there in the lower right corner of the screen.)

This tossing gesture works just as described with buttons, locked fields, and cards. I have extended it to handle backgrounds and buttons by adding Option-key and Command-key variations. The background is handled like the card, but with the Option key depressed; the stack uses the Command key. This convention is easy to modify if you use those keys in incompatible ways. Fields that are not locked are a special problem, since clicking on such a field puts you into text-entry mode. Some developers use command-shift-click to get the attention of an unlocked field, taking advantage of the fact that HyperCard traps this combination. I chose simply to lock the field before tossing it, and the script includes a simple gesture that toggles the lockText property of a field.

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```
-------------------------------------------------
Pugh  script
-------------------------------------------------

--  This handler should be placed in the home stack's
--  script. It puts a pseudobutton in the upper lefthand
--  corner of every card of every stack. Clicking in the
--  corner of a card, as long as there is no real object
--  there to trap the mouse click, causes a mouseUp
--  message to fall through to the home stack, where
--  this handler catches it.
--  Original by Jon Pugh, Livermore CA
--  Modified by Mike Swaine 6/1/88
--  Released to the public domain.
on  mouseUp
   if item 1 of the clickLoc <26 and item 2 of the¬
   clickLoc <26
   then
      -- Substitute code of your own for the next five
      -- lines to make the pseudobuttons do what you
      -- want.
      ask "What do you want to edit?" with card button 1
     if it is not empty
     then
        edit script of it
     end if
   else
      pass mouseUp
   end if
end  mouseUp

-------------------------------------------------
Nicholas  script
-------------------------------------------------

--  This handler implements a pickup gesture.
--  Click on the button to which it belongs, and the
--  button follows your mouse movements around the
--  screen until you click again. If this is over
--  another button, the picked-up button invokes the
--  editor on the script of the target button.
--  Original by John Nicholas, Clarendon Hills IL
--  Comments & visuals by Mike Swaine 6/1/88
--  Released to public domain.
on  mouseUp
   -- Save the button's current location so you can put
   -- it back after its travels with the mouse.
   put the loc of me into oldLoc
   -- Move this button to the very front. You don't want
   -- it to slide UNDER the target button!
   choose button tool
   click at the loc of me
   put 0 into numAdjust
   repeat until the number of me is the number of card¬
     buttons
      doMenu bring closer
      add 1 to numAdjust
   end repeat
   choose browse tool
   -- Let the edit button follow the mouse until you
   -- click again.
   repeat until the mouseClick
     set the loc of me to the mouseLoc
   end repeat
   -- Now put it back where it was, but discreetly.
   set lockScreen to true
   set the loc of me to oldLoc
   -- Double-shift-click to invoke the editor on the
   -- target button.
   choose button tool
   click at the mouseLoc with shiftKey
   click at the mouseLoc with shiftKey
   -- Clean  up after the edit session.
   repeat with i=1 to numAdjust
     doMenu send farther
   end repeat
   choose browse tool
   set lockScreen to false
end  mouseUp
```




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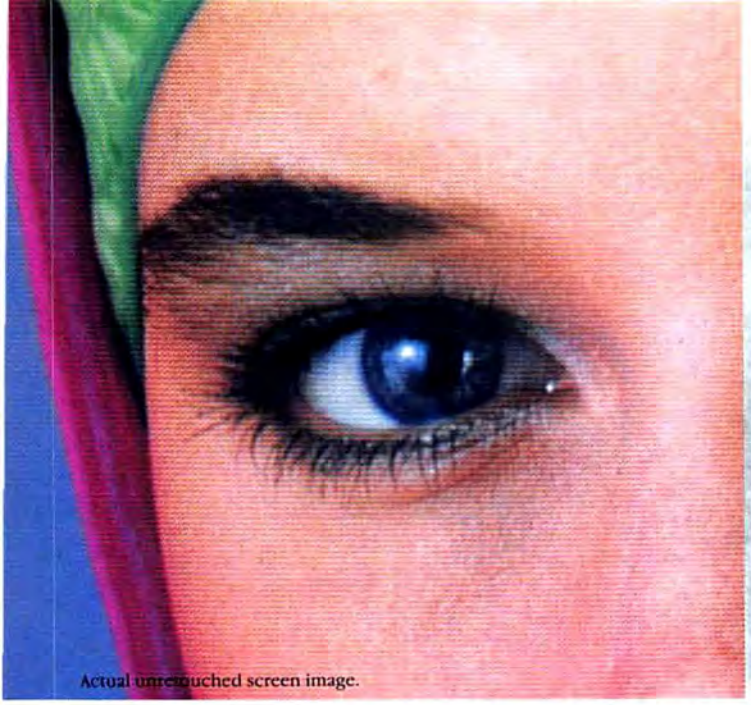
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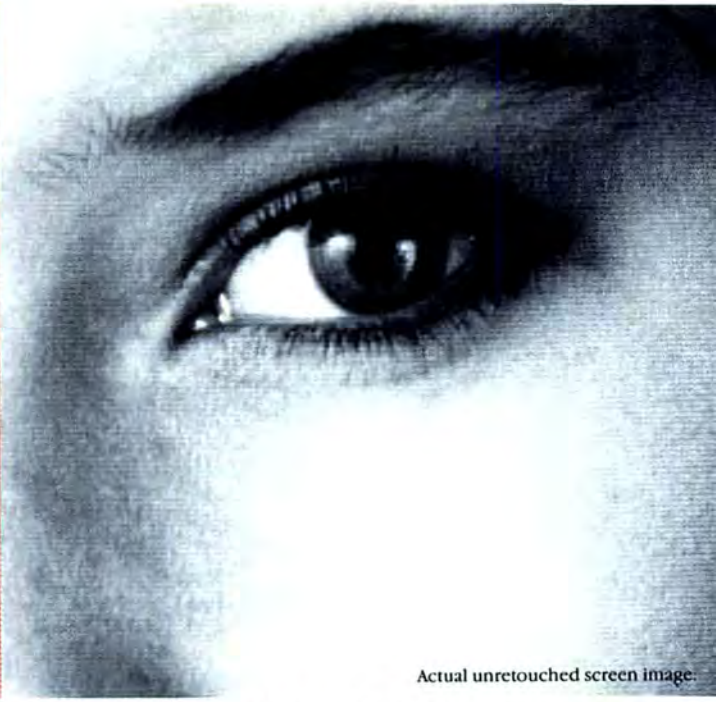
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CARD TRICKS

```
-------------------------------------------------
Swaine  script
-------------------------------------------------

--  This handler locks and unlocks fields.
on  mouseEnter
   if the name of the target contains "field"  and the¬
   optionKey is down
   then
      set the lockText of the target to not the lockText¬
     of the target
   end if
end  mouseEnter

--  This handler traps a select-object-and-wipe-to-edge
--  gesture and interprets it as one of the following:
--     wipe toward Edit in menu bar: edit script,
--     wipe toward Object in menu bar: set property,
--     wipe toward trash can: delete.
--  It is invoked by depressing the mouse button while
--  the cursor is over the object, then dragging to the
--  edge of the card window. It can be used to change
--  the script or properties of any visible button; any
--  visible, textLocked field; or the current card,
--  background, or script.
--  To select the card, click anywhere but on a button
--  or field. To select the background, click with the
--  option key depressed. To select the stack, click
--  with the command key depressed.
on  mouseStillDown
   if the commandKey is down then
     put the name of this stack into obj
   else
     if the optionKey is down then
       put the name of this bkgnd into obj
     else
       put the name of the target into obj
     end if
   end if
   if (the mouseV < 1 and the mouseH < 185) then
     edit script of obj
   else
     if (the mouseV < 1 and the mouseH >= 185) then
       setProp obj
     else
       if (the mouseH > 511) and (the mouseV > 341) then
         trash obj
       end if
     end if
   end if
end  mouseStillDown

--  This handler allows the user to select a property
--  and set its value. It works on buttons, fields, and
--  the current card, background, and stack. For buttons
--  and fields, if the property is number, this handler
--  invokes handler setNumber.
on  setProp  obj
   set lockScreen to true
   set lockMessages to true
   ask "Set what property?" with "Name"
   if it is not empty
   then
     put it into prop
     if (the name of obj contains "field" ¬
     or the name of obj contains "button") ¬
     and prop is "number" then setNumber obj
     else
       if prop is "Name" then put "short name" into prop
       do "put the " & prop & " of obj into default"
       ask "Current setting is" with default
       if it is not empty
       then
         put it into propSetting
         if prop is "short name" then put "Name" into¬
         prop
         do "set the " & prop & " of obj to " &¬
         propSetting
```




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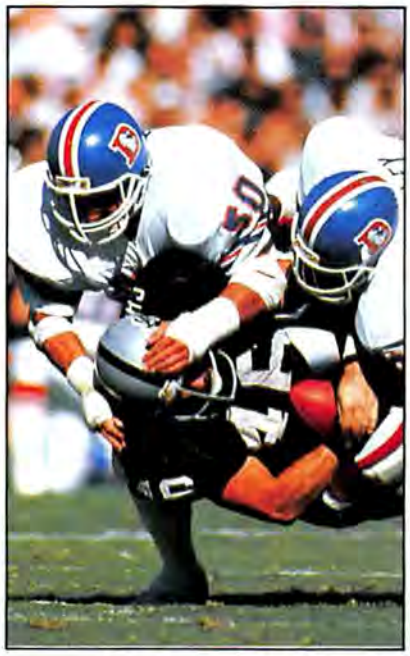
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CARD TRICKS

```
        end if
      end if
    end if
    set lockMessages to false
    set lockScreen to false
end  setProp

-- This handler allows the user to set the value of an
-- object's number. This property is not directly
-- modifiable, but can be adjusted through the send
-- farther and bring closer menu choices. This handler
-- works on buttons and fields.
on  setNumber  btnOrFld
    if the name of btnOrFld contains "button"
    then
       put "button" into objType
    else
       put "field" into objType
    end if
    put the number of btnOrFld into oldNum
    ask "Current number is" with oldNum
    put it into newNum
    if newNum is not empty and newNum <> oldNum
    then
       do "choose" && objType && "tool"
       click at the loc of btnOrFld
       if newNum > oldNum
       then
          repeat with i = oldNum+1 to newNum
             doMenu bring closer
          end repeat
       else
          repeat with i = newNum+1 to oldNum
             doMenu send farther
          end repeat
       end if
       choose browse tool
    end if
end  setNumber

-- This handler deletes an object. It works with
-- buttons, fields, and the current card, background,
-- or stack.
on  trash  obj
    answer "Delete " & obj & "?" with "yes" or "no"
    if it is "yes"
    then
       if the name of obj contains "button" or the name of¬
       obj contains "field"
       then
          if the name of obj contains "button" then choose¬
          button tool
          if the name of obj contains "field" then choose¬
          field tool
          click at the loc of obj
          type numToChar(8)
          choose browse tool
       else
          if the name of obj is the name of this card then
             doMenu "Delete card"
          else
             if the name of obj is¬
             the name of this stack then
                doMenu "Delete stack..."
             else
                if the name of obj is the name of this bkgnd
                then
                   repeat with i=1 to the number of cards
                   go card i
                     if the name of obj is the name of this¬
                     background then doMenu "Delete card"
                   end repeat
                end if
             end if
          end if
       end if
    end if
end  trash
```

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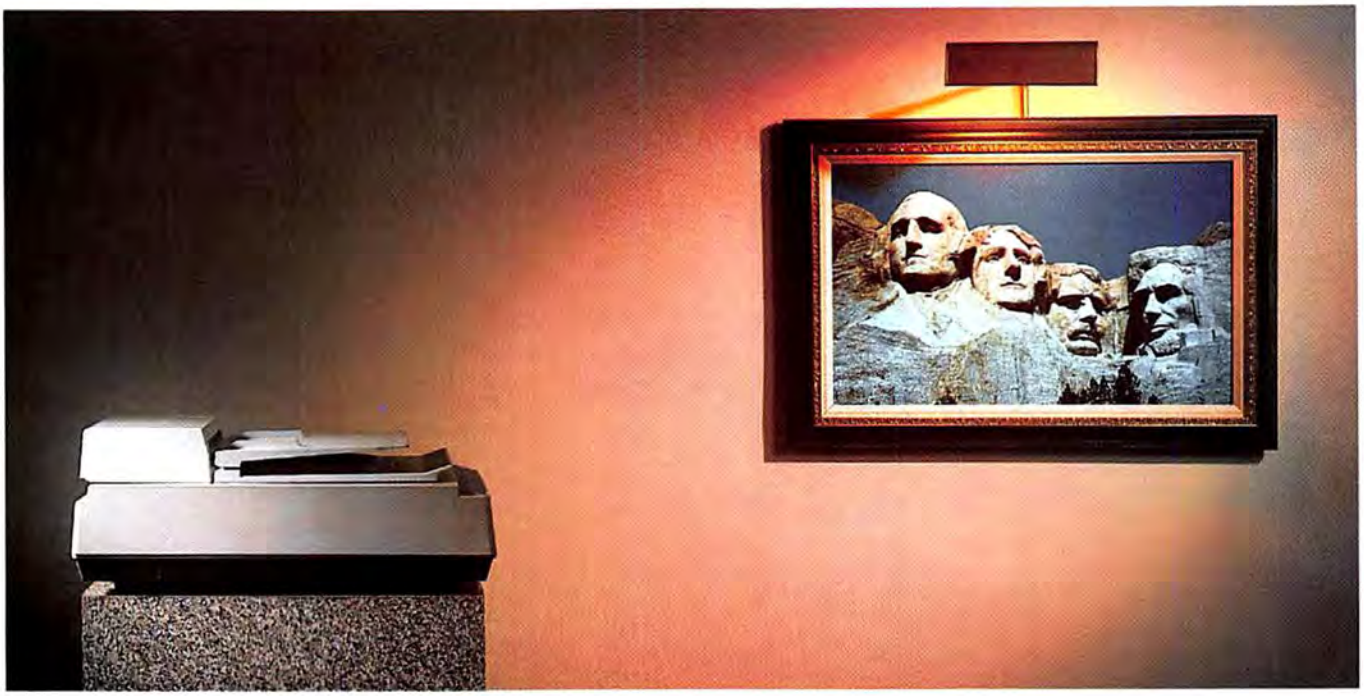
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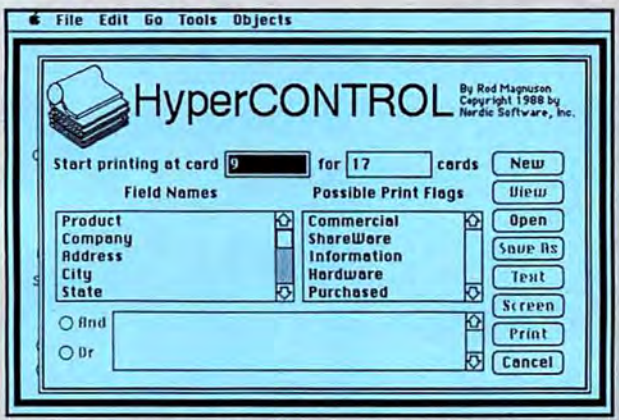
EDITED BY LAURA JOHNSON AND VICTORIA JUAREZ

You've come a long way, HyperCard. You're getting older . . . and better.

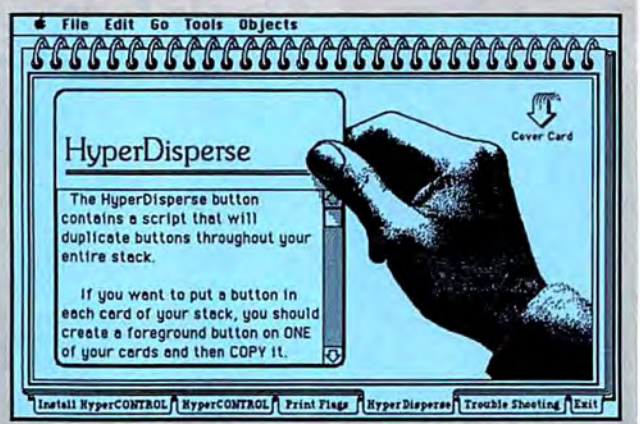
Since "Flash Cards" premiered in our December '87 issue, we have been showing you the good, the bad, and the ugly. Stacks in general are getting more sophisticated, yet we still receive many simple attempts from first-time HyperCard users. We've introduced you to a variety of applications — from a goldfish bowl and an infinite number of Rolodex variations to a tour of the brain and a video applications interface. Some of our Flash Cards listings have graduated to Quick-Click reviews and full-feature articles.

You can find the shareware and freeware stacks on bulletin boards and the commercial stacks at your local software emporium. If you create a stack that you think others will be interested in, send it to Flash Cards c/o *MacUser*, 950 Tower Lane, 18th floor, Foster City, CA 94404. We can't promise to show your stack, and we can't return your disk.

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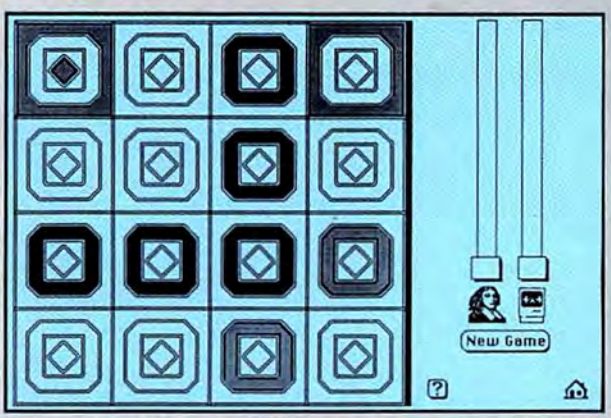


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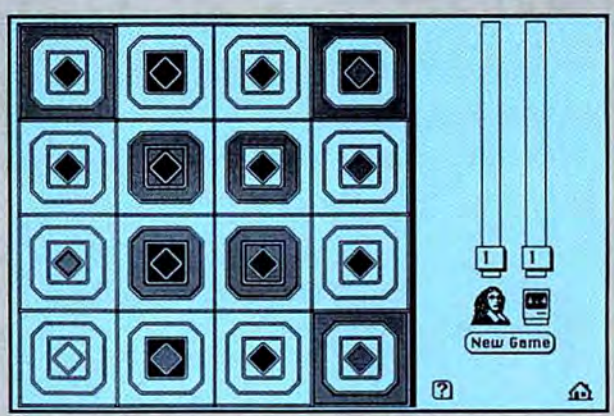


and save field layouts as documents. It's available from Nordic Software, 3939 North 48th Street, Lincoln, NE 68504 for $59.95.

4-Square

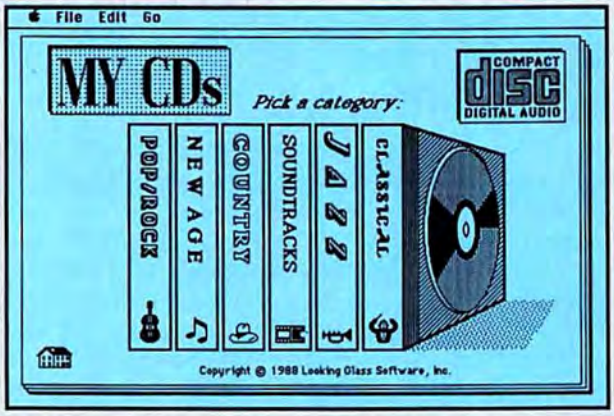


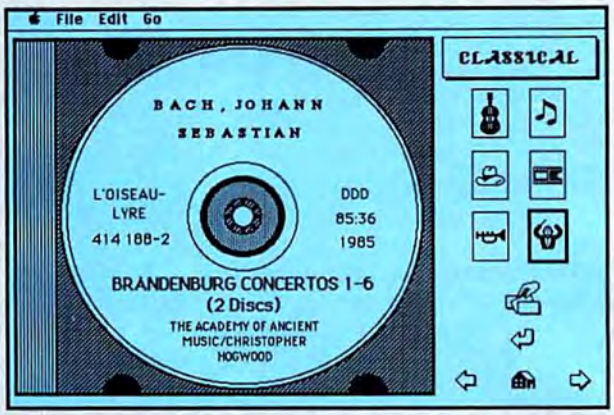
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it. 4 X 4 is shareware, available from Bruce Wilson and Michael Niemack, 1239 East Palm Street, Altadena, CA 91001, for $7.

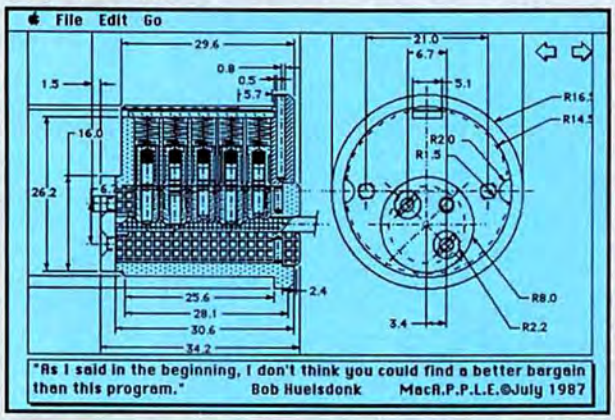
See De List

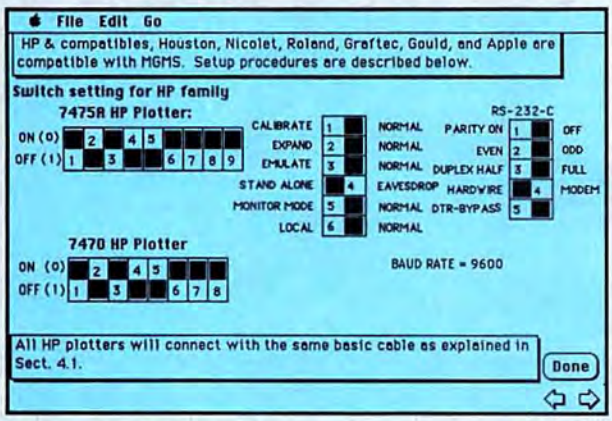




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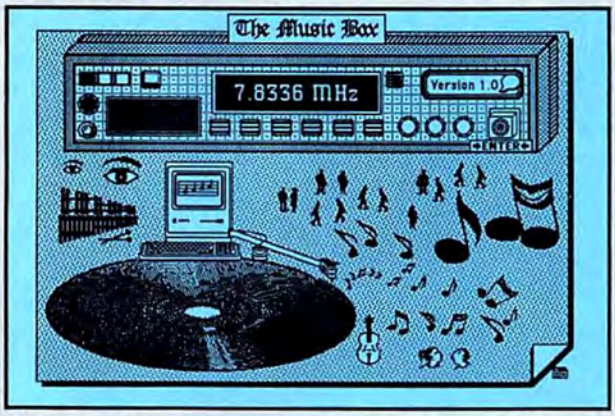
Draw Trek

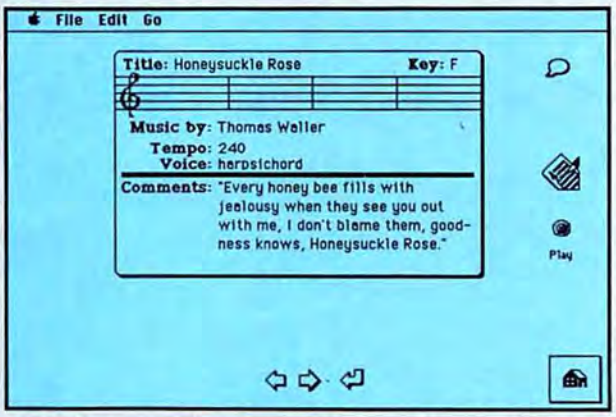




Learn to use MGMStation/CAD efficiently. This HyperCard tutorial takes you on a tour of 200 functions. It's free from Micro CAD/CAM, 5900 Sepulveda Blvd., Van Nuys, CA 91411; (818) 376-0008; Available on CompuServe and GEnie.

Play That Tune





File your favorite tunes on this stack, then play them or use them in other HyperCard applications. Click on the music paper to enter tunes of any length in standard HyperTalk musical notation. The Music Box is free from Oscar F. Hills, 34 Maplewood Terrace, Hamden, CT 06514; CompuServe: 73317,3005.

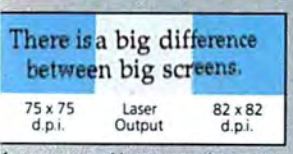
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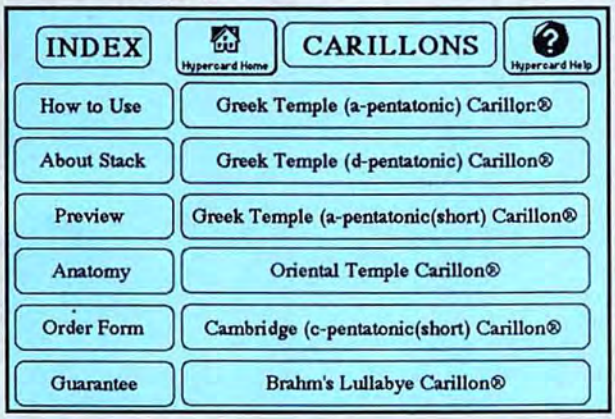
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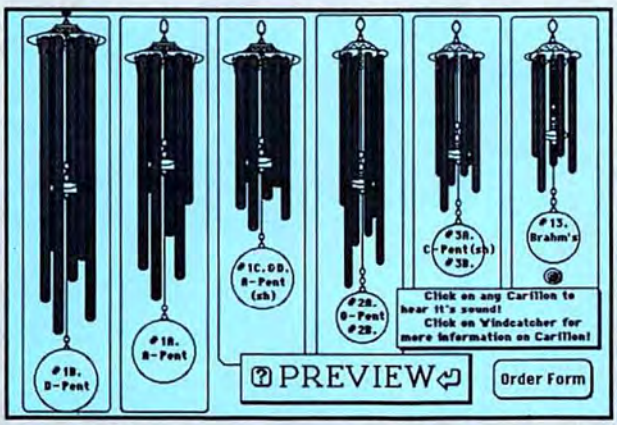
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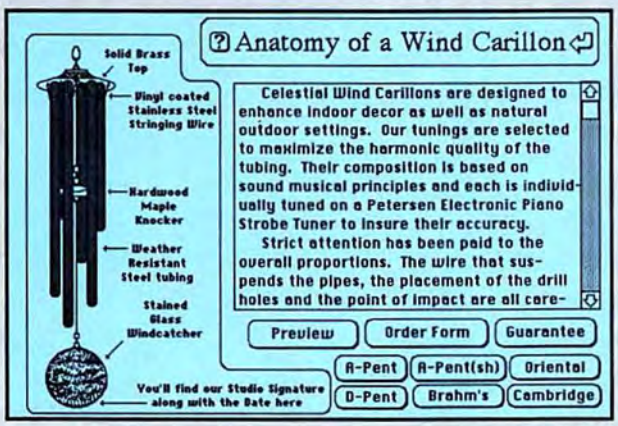
ll screens shown are unretouched photographs of running displays. The desktop publishing example was created with Quark XPress.™ The CAD document was created with Versacad.™ MegaScreen, MegaTalk and WYSIWYW (What You See Is What You Want) are Trademarks of MegaGraphics, Inc. Apple and AppleTalk are Registered Trademarks and Macintosh is a Trademark of Apple Computer, Inc. Versacad is a Registered Trademark of Versacad Corp. Quark and XPress are Trademarks of Quark Incorporated. MegaGraphics is an Authorized Apple Value Added Reseller. ©1988, MegaGraphics, Inc.

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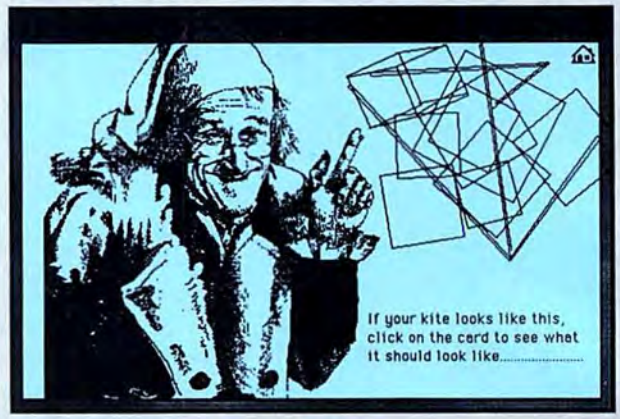


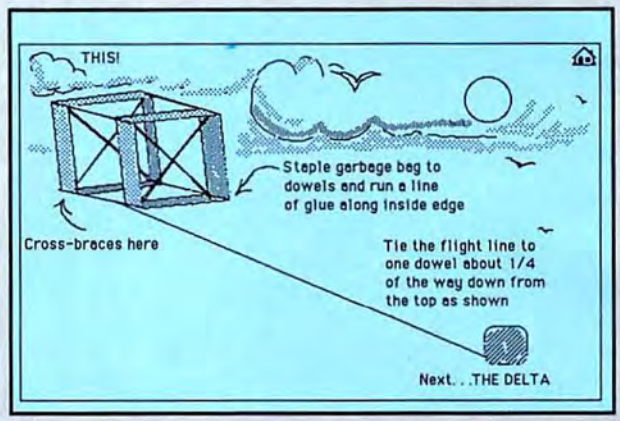


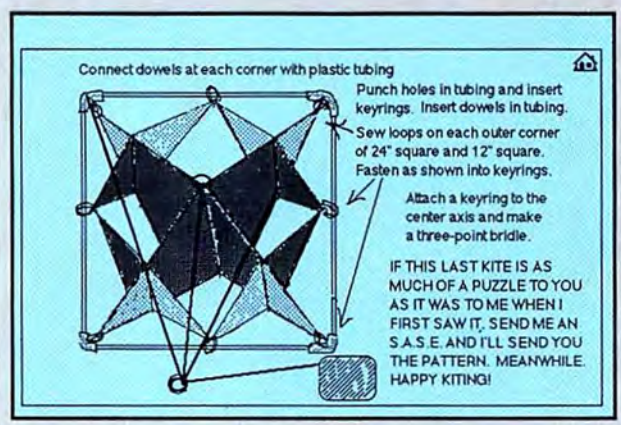


Nathan Ranaga Farber found HyperCard could be used in an innovative way to present his product, Celestial Wind Carillons. This stack lists the carillons available, with sound samples and prices. It's free from Nathan Ranaga Farber; his address is Route 1, P.O. Box 494, Eureka Springs, AR 72632.

Go Fly a Kite







The stack includes directions for making ten classic kites — from a simple diamond kite to a Chinese dragon — using readily available items, such as paper plates and garbage bags, or purchased nylon fabric. For more information on *Kites* contact Robert Huber, TimeScapes, 501-½ St. Claire Street, Ashland, WI 54806.

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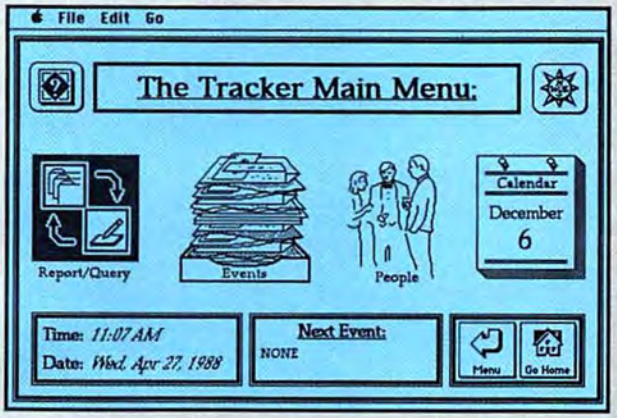
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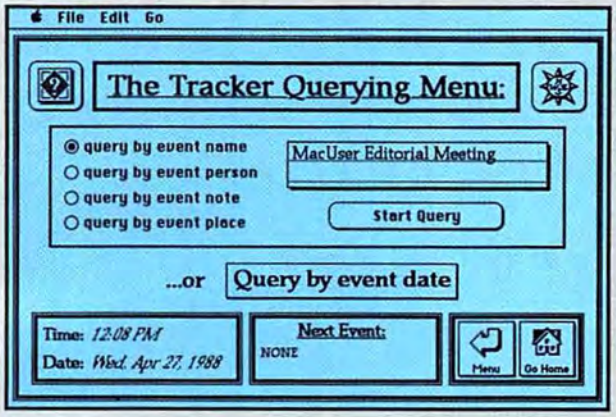
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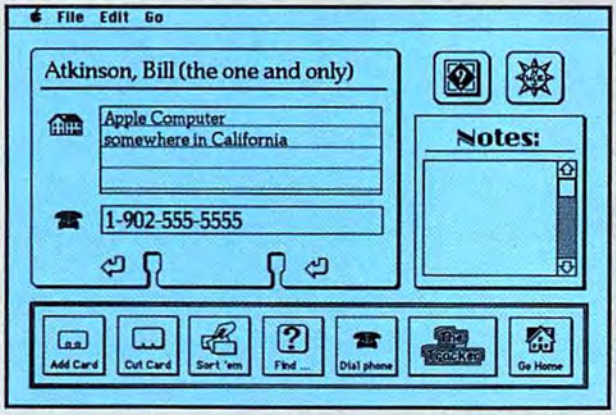
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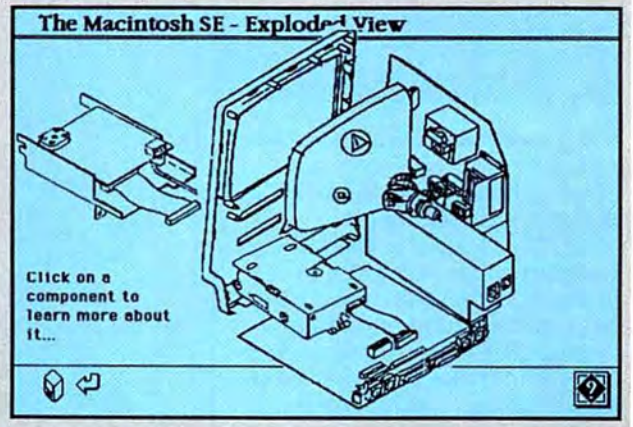


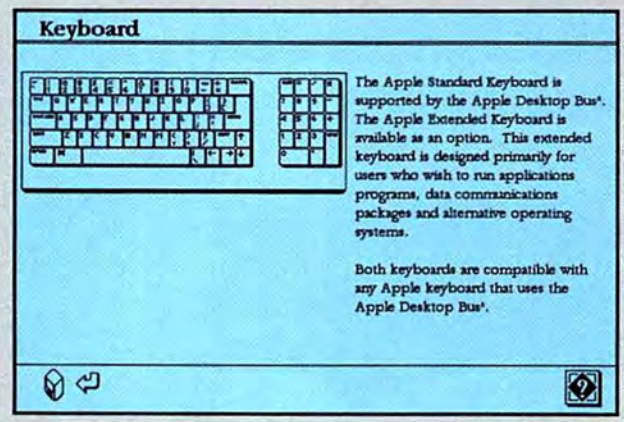


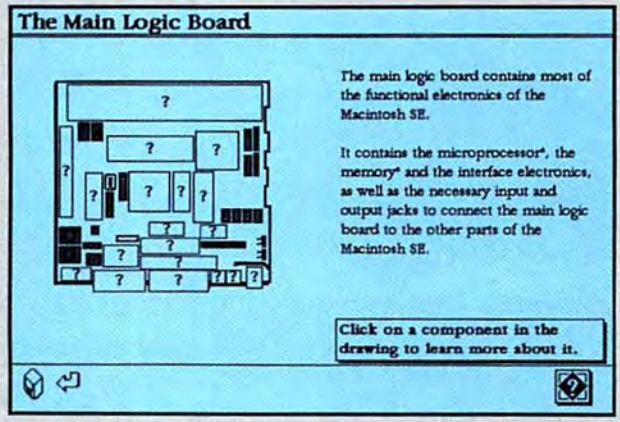


The Tracker contains a contact database, an event database, and a report/querying engine with unique search capabilities. For more information, contact Michael Hoefflinger, Stack Creations, 700 Carrolton Blvd., W. Lafayette, IN 47906.

Anatomy of a Mac







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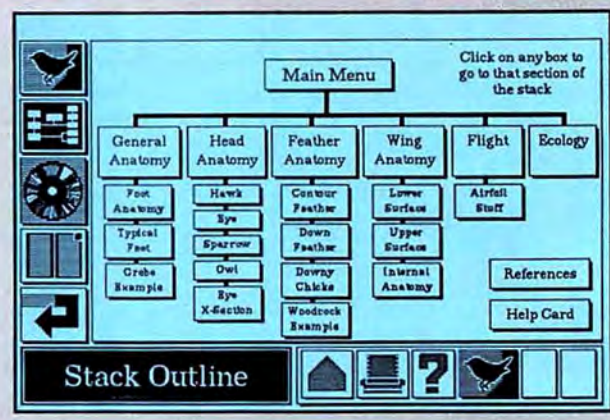
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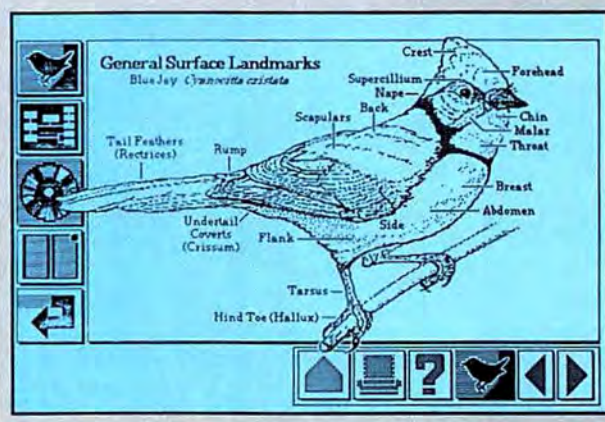
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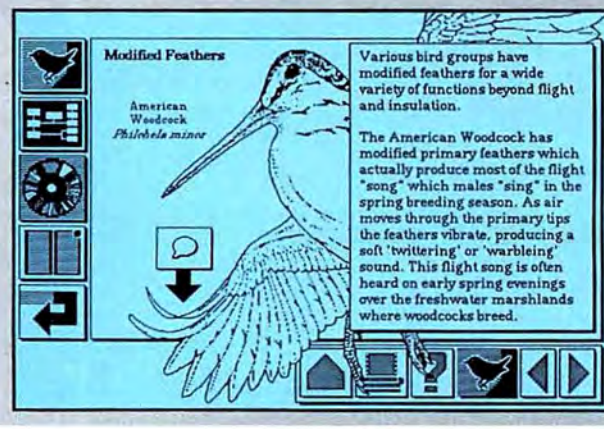
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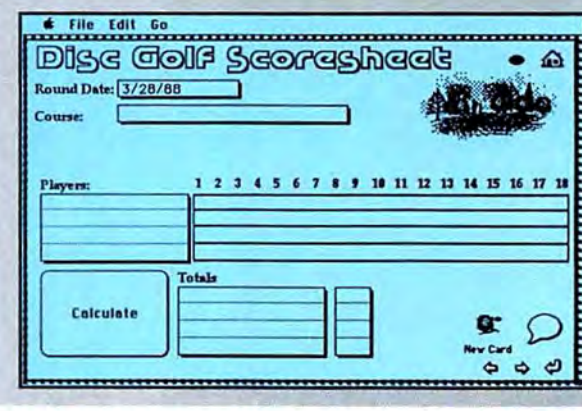


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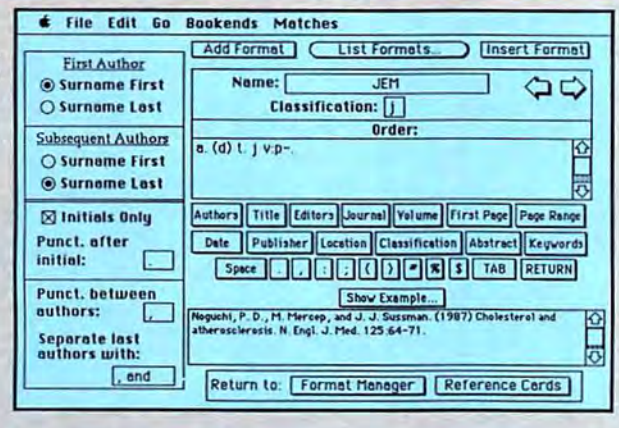
Record your disk or "real" golf scores and check your totals using Disc Golf Scores. Take your Mac on the green and calculate on the spot. From Tom Poston, 2114 Lockhart Drive, Charlotte, NC 28203; CompuServe 71551,2020.

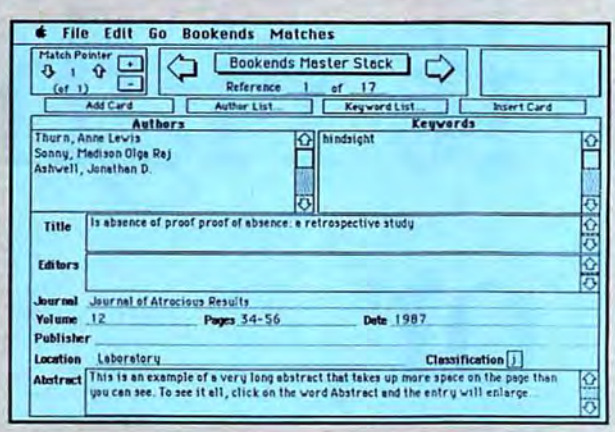


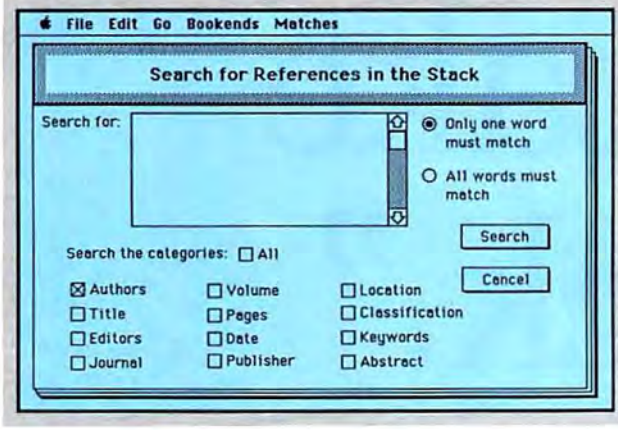
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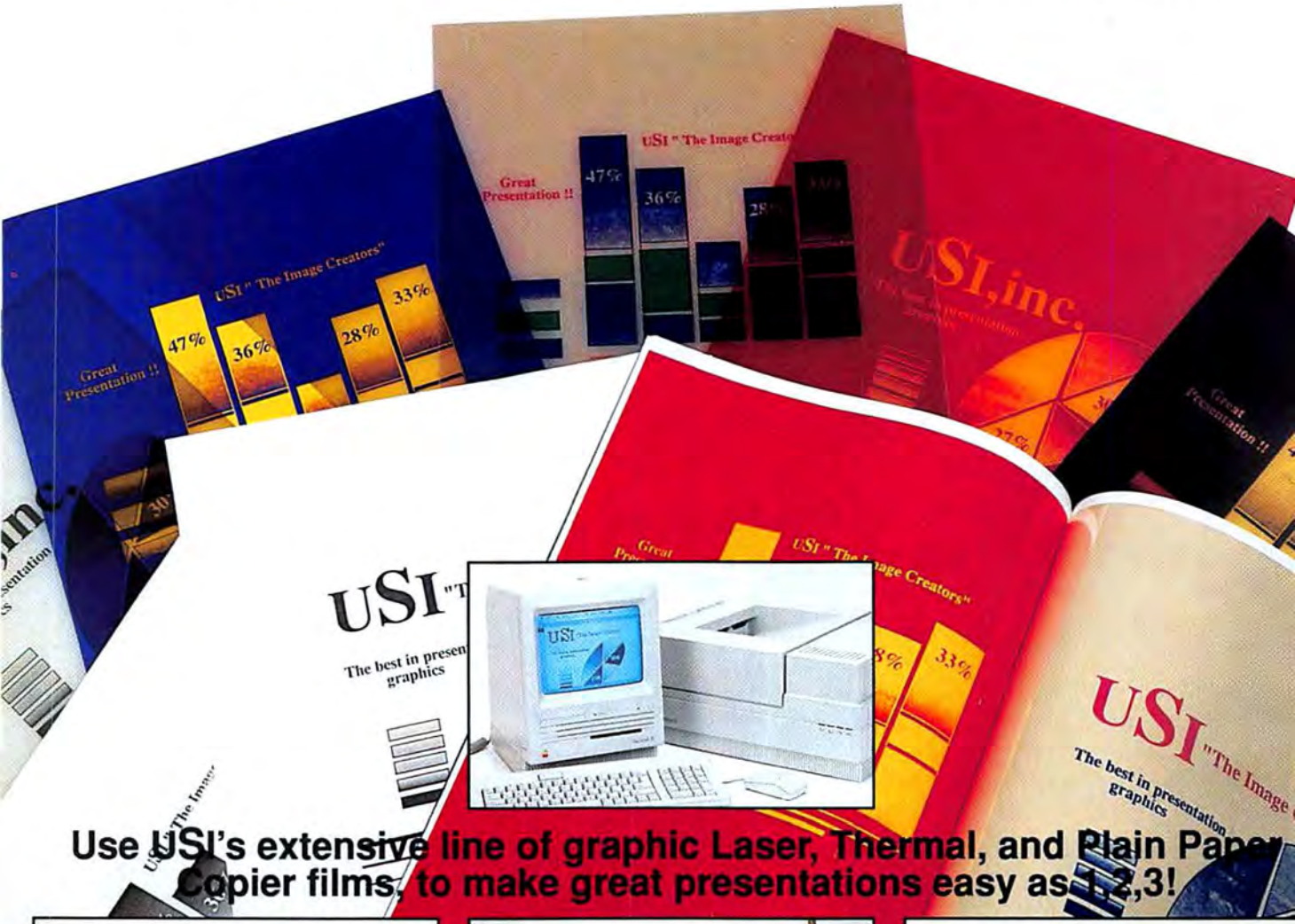
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Jazz provides well-integrated modules for word processing, graphs, ★★★★ worksheets, databases, and communications. HotView is best feature. Requires 512K+ and external drive. Version 1A requires 400K drive. $395. Lotus, 55 Cambridge Parkway, Cambridge, MA 02142. CP (Prem)

Microsoft Works is an integrated application that includes word ★★★★½ processing, database, spreadsheet, and telecommunications functions. The telecommunications module includes both background up- and downloading. $295. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Oct 86) ★'86 Eddy

Trapeze (version 2.0) is a powerful presentation worksheet that ★★★★½ combines mathematical functions and graphic representation. The interface, which consists of an icon bar, can be awkward to use. Mac II and color supported. $395. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Dec 87)

BUSINESS ACCOUNTING

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Back to Basics Accounting is a powerful double-entry accounting ★★★★ software package for the small business user with GL, AR, and AP modules. Exhaustive manual with numerous examples. Report capabilities are excellent. $199. Peachtree, 4355 Shackleford Rd., Norcross, GA 30093. NCP (May 87)

BPI General Accounting is an easy-to-use system. Six journals, ★★★★ AR, AP, Payroll, and GL on one disk. Offset amounts automatically post to ledgers. Up to 8000 accounts. Detailed records, wide range of reports. Switcher and HFS compatible. $249. Requires 512K+. BPI Systems, 3001 Bee Cave Rd., Austin, TX 78746. NCP (Aug 86)

Insight is a high-powered accounting program for the small-to- ★★★★½ medium-sized business. Modules include Accounts Receivable, Payables, and General Ledger; others are in the works. Requires 512K and hard disk. $595. Layered, 529 Main St., Boston, MA 02129. NCP (Dec 86) ★'86 Eddy

Rags to Riches integrated accounting modules (General Ledger ★★★★½ and Accounts Receivable) uses Mac interface to the hilt. Information entered in one window automatically transfers. Detailed, flexible report options. Very easy to use, but it can be confusing with several windows on screen. Requires 512K+ and printer. $199.95 per module. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Dec 85)

Rags to Riches Professional Billing tracks and bills professional ★★★★ services. Batches activities for individual timekeepers. Use as standalone, or integrate with R to R modules. Requires 512K+, printer. $399.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Feb 87)

Simply Accounting has 6 ledgers and 8 journals to handle the ★★★★ needs of most small-to-medium sized businesses. Better Mac interface than most accounting packages. Unfortunately, payroll tax labels can't be modified, which forces you to subscribe to Bedford's yearly update service. Version 1.03. Requires 1 M. Mac II and MultiFinder friendly. $349. Bedford Software, 15311 Northeast 90th St., Redmond, WA 98052. NCP (Sept 88)

Strictly Business General Ledger features clear, well-outlined set- ★★★★ up procedures and operations. Very flexible, up to 99 profit centers with up to 100 departments each, and customized reports. Program print spools. Requires 512K+, printer and external drive. $395. Future Design, 13681 Williamette Dr., Westminster, CA 92683. NCP (Dec 85) ★'85 Eddy

Timeslips III tracks billing and expense information for people who ★★★★½ charge by the hour. DA turns the clock on and automatically bills a client when a session is over. Version 1.06. Requires 512K and two disk drives. Mac II and MultiFinder friendly. $199.95. North Edge Software, 239 Western Ave., Essex, MA 01929. NCP (Sept 88)

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MINIFINDERS



double-entry accounting techniques. Will work on 128K. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. CP (Mar 87)

Easy Checks puts your check register (or credit card records or any ½ other simple financial account) into a desk accessory. Creating formats is rough, can't save reports to disk and there's no LaserWriter support. Requires 512K+. $44.95. PAR Software, PO Box 1089, Vancouver, WA 98666. NCP (Apr 88)

MacInTax is an excellent tool for preparing tax forms. Intuitive, easy ½½½½½ to use. Accepts data from leading personal finance programs. Good built-in help. Liberal upgrade policy for current owners. California forms set also available. $119 federal; $65 California. SoftView, 4820 Adohr Lane, Suite F, Camarillo, CA 93010. NCP (Mar 87) ★'86 Eddy

MacMoney is a financial manager that uses information gleaned ½½½½ from your checks and deposit slips. Produces a variety of reports and graphs. Requires 512KE and printer. Version 3.1 reviewed. $119.95. Survivor Software, 11222 La Cienega Blvd., Inglewood, CA 90304. NCP (Jul 88) ★'86 Eddy

Market Pro is a comprehensive portfolio management program for ½½½½ the generation of fundamental data as well as technical charts and graphs. Requires 512K+, external drive, and Hayes-compatible modem. $395. Pro Plus Software, 2830 E. Brown Rd., Mesa, AZ 85203. NCP (Nov 86)

DATABASES

Business Filevision is a masterpiece of Macintosh programming, ½½½½ the only true graphic database on any micro. Much more powerful than the original, accepts MacPaint graphics. $395. Marvelin, 3420 Ocean Park Blvd., Santa Monica, CA 90405. NCP (Feb 86)

C.A.T. is a dedicated relational database for managing contacts, ½½½½ activities and time. Links between types of data make it easy to keep track of important people and events. $399.95. Chang Laboratories, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Nov 87)

dBase Mac is a relational DBMS that includes a structured pro- ½½½½ gramming language to develop standalone applications. Palette icons as alternatives to menu commands will help novice users. Requires 1M+. $495. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319. NCP (Feb 88)

Double Helix II is a powerful database that supports a multiuser ½½½½½ environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single user version. Odesta, 4084 Commercial Blvd., Northbrook, Ill 60062. NCP (Apr 88)

File is a flexible data manager. Creates files for a variety of data, ½½½½ including simple graphics. Files are created in simple row/column format, but reports and forms are easily customized. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP

FileMaker Plus retains features of FileMaker and reads FileMaker ½½½½½ data, also displays up to 8 files, uses "lookup" to retrieve data from other files. Enhanced calculation with many additional functions. Scripts automate a sequence of actions. Requires 512K+. $295. Nashoba Systems, 1157 Triton Dr., Foster City, CA 94404. NCP (Nov 86) ★'86 Eddy

4th Dimension is a versatile tool that creates standalone relational ½½½½½ databases. Design and layout environments allow easy linking of information. Robust. Pascal-like procedure language. $695. Acius, 20300 Stevens Creek Blvd., Cupertino, CA 95014. NCP (Nov 87) ★'87 Eddy

FoxBASE+/Mac is a relational database that can read unmodified ½½½½½ dBASE III Plus applications created in the MS-DOS world. Amazingly fast. Good implementation of dBase on the Mac. Version 1.0. Requires 1M. Mac II and MultiFinder friendly. $395. 118 W. South Boundary, Perrysburg, OH 43551. NCP (Sept 88)

MacDewey! (version 2.5) is a cataloging program featuring the ½½½ Dewey Decimal Classification system. Uses predefined fill-in-the-blank fields to create catalog cards. Suffers from bugs in search routines and the inability to distinguish first names. Not for professionals; home libraries might benefit. $79.95. Mousetrap Software, 336 Coleman Dr., Monroeville, PA 15146. NCP (Nov 87)

MacRelax is a relational list manager that stores data in a column ½½ format. Files can be related by sharing a common field. Flexible design for reports. Screen display is sometimes strange. Easy to use but not obvious to learn. $59.95. 1M+ required. Arrays, 6711 Valjean Ave., Van Nuys, CA 91406. NCP (Jan 87)

Omnis 3 is a power database, featuring concurrent-multiple-file ½½½½ management. Can handle 24 files, 12 at a time, and is fully relational. Create custom environments, including user-defined menus, commands, and dialogs. $495. Blythe, 2929 Campus Dr., San Mateo, CA 94403. NCP (Mar 86)

OverVUE is a power-packed relational database that has extensive ½½½½½ sorting, summarizing, and report generation capacity. Has macros, and a charting function. Good manual. It can exchange files with a very wide variety of other programs (including IBM software). $295. ProVUE, 222 22nd St., Huntington Beach, CA 92648. NCP (Nov 85) ★'85 Eddy

Professional Bibliographic System is a specialized database for ½½½½ storing and retrieving bibliographies. Redesigned templates (20) simplify creation. Version 2.6 offers improved speed, flexible formatting. $295. Personal Bibliographic Software, Box 4250, Ann Arbor, MI 48106. CP (Feb 87)

Record Holder is a flexible, easy-to-use form-oriented data manag- ½½½½ er. Setup is particularly simple and the search features are powerful. $69.95. Software Discoveries, 137 Krawski Dr., South Windsor, CT 06074. NCP (Apr 86) ★'87 Eddy

Reflex for the Mac is a flexible relational database. Excellent report ½½½½½ generator gives full control over appearance, style of output. Requires 512K+, second drive, or hard disk. $99.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 86) ★'86 Eddy

Reflex Plus is a relational database with "smart" entry, and report ½½½½ design, but no overall programming facility. Simple to set up, yet fast. Graphic capabilities are quite limited. Version 1.0 reviewed. $279. Borland/Analytica, 4585 Scotts Valley Dr., Scotts Valley, CA 95066-9987. NCP (Feb 88)

Writer's Workshop maintains orderly records for writers. It can ½½½½ track manuscripts, income, and publisher. Based on and includes Runtime Helix. $99.95. Futuresoft System Designs, PO Box 132, New York, NY 10012. NCP (Apr 87)

NUMBER CRUNCHING

DesignScope is a construction kit for digital and analog circuits. Up ½½½½ to 254 components can be utilized in a single circuit, and the equivalent of a dual-trace oscilloscope plots output in real-time. Good for testing circuitry without touching a breadboard. $249.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Nov 86)

Excel is THE power spreadsheet. Of the Mac, of the world. Has 256- ½½½½½ column by 16,384-row capability. Features include a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. 512K+ Mac and external drive required. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Prem) ★'85 Eddy

MacCalc is a fast, competent, full-featured spreadsheet with im- ½½½½ pressive built-in functions, font control, on-line help, ability to expand columns and rows, and read/write SYLK or WKS files. The worksheet is 125 columns by 999 rows. A very

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flexible, pure spreadsheet. $139. Bravo Technologies, c/o DPAS, PO Box T, Gilroy, CA 95021. NCP (Sep 86) ★'86 Eddy

MacSpin is a unique and powerful graphic data analysis program. ★★★★ Handles multivariate data in a highly visual manner. Nothing else like it for any micro. $199.95. D² Software, PO Box 9546, Austin, TX 78766-9546. CP (Jun 86) ★'87 Eddy

MacSQZ! compresses Excel files up to 88% of their actual size. ★★★★★ Good to free up disk space. Also contains password utility. MultiFinder hostile. Requires Excel. Version 1.01. $79.95. Turner Hall Publishing, 10201 Torre Ave., Cupertino, CA 95014. NCP (Aug 88)

MathView Professional is an equation solver that combines two- ★★★★ and three-dimensional plotting with routines for matrices, differential equations and integrals, complex numbers, and the like. Interface leaves a lot to be desired. Version 1.0. Requires 512KE and two disk drives. Mac II and MultiFinder friendly. $249.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Sept 88)

Microtemp Financial Calculators is a set of worksheets for Excel ★★★½ and Works that calculates common personal and small business financial problems. Includes cash flow, real estate and rate of return calculators. Version 1.0.$79.95. Microtemp, P.O.Box 1208, Santa Rosa, CA 95402. NCP (Aug 88)

Mindsight is a professional level, decision-support, and business ★★★★ planning package. Can work with IFPS on mainframes, and is able to transmit models in both directions. Powerful and easy to use. Requires 512K+. $249. Execucom Systems, PO Box 9758, Austin, TX 78766. CP (Dec 86)

Multiplan, the first Mac product from someone other than Apple, is ★★★½ beginning to show its age. Still a very capable basic spreadsheet with simple sorting, 63 columns by 255 rows, many built-in functions, other standard spreadsheet features. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP (Mar 86)

Parameter Manager is a data manager, incorporating integrated ★★★★ scheduling, statistics, and graphics. It has solid spreadsheet, calendar, and database functions and reports can be customized using other software. Parameter Manager can also import data from Excel or Lotus 1-2-3. $495. Rebus, 2330-B Walsh Ave., Santa Clara, CA 95152. NCP (Jul 87)

StatView 512+ is a very intuitive statistical analysis program with ★★★★★ tools needed to understand any set of data. Holds data in a spreadsheet-like form. Full-featured, fast, and accurate. Extremely wide range of analyses possible. Requires 512K+ and 800K of disk space to operate. $349.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Dec 86)

101 Macros for Excel offers all the power of macros without having ★★★★ to learn how to write them. Some gems include a macro to transpose rows and columns, and a search and replace macro. Requires Excel. $69.95. Macropac International, 19855 Stevens Creek Blvd., Cupertino, CA 95014. NCP (Jul 88)

GRAPHICS & DESIGN

ArtWare: Borders enables you to customize your own clip art disk. ★★★★ The border collection is the best package in terms of quality of art. Other packages available. Requires a program that reads Encapsulated PostScript files. $129. Artware Systems, 3741 Benson Dr., Raleigh, NC 27609. NCP (Aug 88)

CalendarMaker creates monthly calendars in a variety of formats. ★★★★½ Users can incorporate their art and daily notes. Note files can be imported from a variety of DA calendars and outliners. Shareware and prelicensed versions available. $49.95 CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Dec 86)

Canvas is a Draw and Paint program that uses QuickDraw as its ★★★★½ output language. Full of features, including free rotation and one-and-two-point perspective. Also has graphics macro commands, unusual in a program this inexpensive. $295. Deneba, 7855 N.W. 12th St., Suite 202, Miami, FL 33126. NCP (Jan 88)

Chart can easily create area, bar, column, line, pie, scatter, and ★★★½ combination charts. A total of 42 styles are provided. Limited to 100 data items (64 in a series) on a 128K Mac, approximately twice that on a 512K Mac. $125. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP

Click & Clip offers seasonal graphics packages. Of the two quarter- ★★★ ly editions released, the Spring '88 package is the better collection. Requires a program that reads Encapsulated PostScript (EPS) files. $39.95 per edition. Studio Advertising Art, P.O. Box 18432-52, Las Vegas, NV 89114. NCP (Aug 88)

ClickArt Special Effects is a MacPaint enhancement desk ★★★½ accessory. Allows the user to distort, stretch, rotate, and use perspective on MacPaint documents. A necessary addition for all serious users of MacPaint. $49.95. T/Maker, 1973 Landings Dr., Mountain View, CA 94043. NCP (Apr 86)

ColorPrint allows you to print FullPaint, MacPaint, MacDraw, and ★★★ MacDraft documents in color using the ImageWriter II or ImageWriter I. Paint files set up as overlays are read into ColorPrint, and the program controls proper positioning registration. $29.95. I/O Design, PO Box 156, Exton, PA 19241. NCP (Mar 86)

Comic Strip Factory is an assembly program for creating comic ★★★★½ strips. Includes a database of parts for various characters and backgrounds for panels. Good text editing in balloons. Can import and export in MacPaint format. $69.95. Foundation Publishing, 5100 Eden Ave., Edina, MN 55436. NCP (Dec 87)

Cricket Draw is an object-oriented drawing program that will pro- ★★★★★ duce stunning, high-quality output. Designed to print on PostScript-compatible devices, such as the LaserWriter. Making shadows and flowing fountain effects is just a point and click away. $295. Cricket Software, 30 Valley Stream Pkwy., Malvern, PA 19355. NCP (May 87)

Cricket Graph easily generates 12 graph types. Multiple windows ★★★★★ can be displayed. Graph prints in up to 8 colors with up to 16 patterns. Self-generating macro formatting. Switcher, HFS, LaserWriter, and plotter compatible. $195. Cricket Software, 30 Valley Stream Pkwy., Malvern, PA 19355. NCP (Jun 86) ★'86 Eddy

Cricket Presents creates desktop presentations in the form of ★★★★ overhead transparencies, slides, or even on the Mac itself. Modem files to Autographix Imaging Service for overnight color slides. Good chart and graph capability; poor text handling. Version 1.0. Requires 1M and a hard drive. Mac II friendly. $495. Cricket Software, 40 Valley Stream Pkwy., Great Valley Corporate Center, Malvern, PA 19355. (Sept 88)

Crystal Paint creates an electronic kaleidoscope. It is MacPaint's ★★★★½ Brush Mirrors gone wild in a small, simple, yet wonderful application. Does not work in color on Mac II. MultiFinder friendly. Requires 512K+. $49.95. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Feb 88)

Curator catalogs your art and graphics so it's easy to see what's ★★★★½ what and where it is. Supports PICT, TIFF, EPSF, PostScript, MacPaint, and more. Changes creator types. Requires 512K and an 800K drive. $139.95. Solutions International, 29 Main St., Montpelier, VT 05602. NCP (Sep 88)

DeskPaint is a full-blown paint program as a desk accessory. Allows ★★★½ you to spruce up a graphic while in another application. Imports and exports MacPaint and TIFF images. Great for DTP, but not enough features to rival the leaders in paint

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programs. Zedcor, 4500 E. Speedway, Tucson, AZ 85712-5305. NCP (Mar 88)

"Draw it again, Sam..." (v. 1.03) is an object-oriented graphics program, like MacDraw, that adds such useful wrinkles as layered drawing, on-screen libraries, and color. Manual is weak. Requires 512K+ and an 800K disk drive. $150. Aba Software, PO Box 850, Frazer, PA 19355. NCP (Feb 88)

Easy3D is a three-dimensional, solid modeling masterpiece. Four variable light sources, powerful sculpting tools, and an exquisite user interface make this a must-have for graphics enthusiasts. Requires 512K+. $149. Enabling Technologies, 600 S. Dearborn, Chicago, IL 60605. NCP (May 86)

EPS Illustrations is a potpouri of illustrations with no real focus. As an art package, this one is not very useful as you cannot alter any of the drawings. Requires a program that reads Encapsulated PostScript (EPS) files. $129.95. T/Maker, 1973 Landings Drive, Mountain View, CA 94043. NCP (Aug 88)

EZ Draft is a high-level CAD application. Does things usually only found on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter/monitor drivers. A real powerhouse. $1995. $500 for IEGS module to link to other CAD programs. Bridgeport Machines, 500 Lindley St., Bridgeport, CT 06606. CP (May 87)

FastForms! Construction Kit is both a fast and efficient business forms creator (a drawing program) and a specialized application (and DA) to fill out the data fields in your forms. $149 (US). Shana Enterprises, Advanced Technology Center #105, 9650-20 Ave. Edmonton, Alberta T6N 1G1, Canada. NCP (Nov 87)

Fluent Fonts is a two-disk collection of fonts. Forty-nine different items are included. All install easily in user systems. Most are well executed and some are extraordinarily nice. This is a real bargain for font lovers. $49.95. CasadyWare, PO Box 223779, Carmel, CA 93922. NCP

Fontastic is the best font editor now available for the Mac. Features a large editing window with a grid to make positioning easy. Select letters to edit by clicking on a matrix of the font. Allows scaling of existing fonts and previewing the various styles. $49.95. Altsys, PO Box 865410, Plano, TX 75086. NCP (Dec 85)

Fontographer is a complex, but excellent laser font creator. The fonts created have 300 bits-per-inch resolution. The fonts are actually downloadable PostScript files. $395. Altsys, PO Box 865410, Plano, TX 75086. CP

FreeHand greatly simplifies the drawing of curves, the use of layers and text handling when manipulating PostScript graphics. And it works in color on the Mac II. Requires 1M and 2 disk drives. $495. Aldus, 411 1st Avenue South, Seattle, WA 98104. NCP (Aug 88)

FullPaint is an expanded version of MacPaint. Features include full-screen drawing, multiple documents opening simultaneously, brush editing, movable tool palettes, special text effects, and much more. It fills the gaps left by MacPaint. $99.95. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319. NCP (Jun 86) ★'86 Eddy

GraphicWorks 1.1 is a powerful drawing and painting program that creates high-resolution bit-maps. Easels contain graphics, balloons hold text, and both reside on panels. Graphic primitives are now a separate tool. $149.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. NCP (Oct 87)

Graphidex indexes MacPaint and MacDraw format graphics without removing them from their original documents. Indexed graphics are retrieved via the Graphidex DA. Can modify an indexed graphic without affecting the original. Best for bit-mapped (Paint format) images, but the design is questionable and the execution imperfect. Requires 512K+. $124.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (May 87)

GridMaker is a tool for artists who use perspective. The program automatically generates a series of three-dimensional plane sets that can be pasted into MacDraw. Sizes and viewing vantage points are easily modified. $49. FolkStone Design, PO Box 86982, North Vancouver BC V7L 4P6, Canada. NCP (Nov 86)

Illustrator is a professional-level graphics program. Unique and powerful drawing technique. Program uses templates for precise and detailed art work. Requires 1M+. $495. Adobe Systems, 1870 Embarcadero Rd., Palo Alto, CA 94303. CP until registered (Jul 87)

Image Club is an overwhelming collection of EPS clip art available on disk and CD-ROM. Comes with a well-designed catalog of images. Requires a program that reads Encapsulated PostScript (EPS) files. $99. Image Club Graphics, 2915 19th St. NE, Calgary, Alberta, Canada T2E 7A2. NCP (Aug 88)

Image Studio puts a photo-retouching lab on the desktop. Editable brushes let you modify digitized images in 65 gray levels. Requires 1M+ and two 800K disk drives. Mac II and MultiFinder friendly. Version 1.0 reviewed. $495. Letraset USA, 40 Eisenhower Dr., Paramus, NJ 07653. NCP (Jun 88)

Images with Impact! brings clip art out of the turn-of-the-century woodcut style and into a modern graphic sensibility. "Graphics and Symbols 1" is the first in a series. Requires a program that reads Encapsulated PostScript (EPS) files. $99.95. 3G Graphics, 11410 NE 124th St., Kirkland, WA 98034. NCP (Aug 88)

Japanese Clip Art is a two-disk set of extraordinary Japanese clip art. Consists of MacPaint documents and separate fonts. Volume I, Heaven, covers mythological subjects; Volume II, Earth, has secular subject matters. $79.95 each volume; $149.95 set. Qualitas Trading, 6907 Norfolk Rd., Berkeley, CA 94705. NCP (Apr 87)

LaserFonts are new fonts for the LaserWriter. Users download them to their machines. Very high quality and very simple to use. Willamette looks like Avant Garde. MicroFonts provides tiny, expanded, and condensed versions of the LaserWriter's own fonts. $34.95 to $44.95 each. Century Software, 2483 Hearst, #175, Berkeley, CA 94709. NCP

LaserPaint's clumsy interface makes it a slow program. There's good laser output, if you persevere through the creation of a document. The support is scads better than the documentation, which is lousy. Version 1.1.4. $495. LaserWare, PO Box 668, San Rafael, CA 94915. CP (Jan 88)

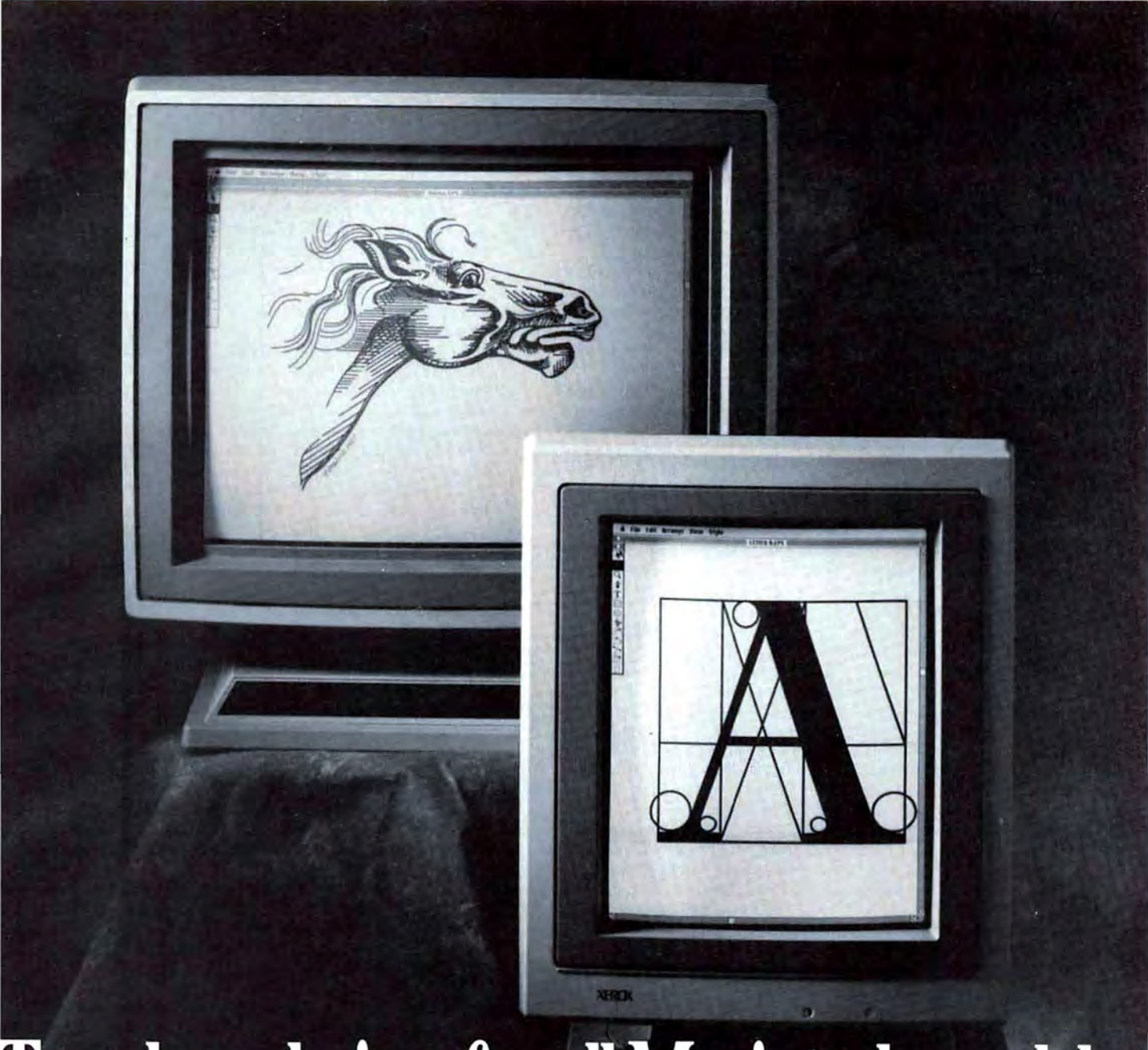
Lasertalk is a PostScript programming tool that establishes interactive contact with laser printers. Preview window and on-line help make it a powerful tool. Requires 1M+ and a PostScript Printer. $249. Emerald City Software, PO Box 2103, Menlo Park, CA 94026. CP until registered (May 88)

The Mac Art Dept. is a collection of over 150 graphic images ranging from foods to hands holding signs to borders. Best suited for letterheads, memos, other business use. $39.95. Simon & Schuster, Computer Software Div., 1 Gulf + Western Plaza, New York, NY 10023. NCP (Mar 86)

Mac-a-Mug is an Identikit-type program for creating faces from facial feature files. Uses scroll bars that are slow and jerky. Lots of creative fun. 1M+ Mac required. $59.95. Shaherazam, PO Box 26731, Milwaukee, WI 53226. CP (Jul 86)

MacCalligraphy is the best simulation of brush painting in any graphics program. User-designed Seals and Touches enable you to design your own signature tool and the style of brush you use. Comes with a clip art disk. $175. Qualitas Trading, 6907 Norfolk Rd., Berkeley, CA 94705. NCP (Feb 88)

MacDraft is an object-oriented graphics program. It sports advanced features such as variable scaling, single-degree ro-



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tation, complex arcs, and a FatBits-like magnification mode. Best used to complement MacDraw, not replace it. $269. Innovative Data Design, 2280 Bates Ave., Concord, CA 94520. NCP (Feb 86)

MacDraw is an object-oriented structured graphics program. Can ★★★★½ be used to design forms, create presentation materials, and do technical illustrations. Drawing sizes up to 8 feet by 10 feet are possible. Text can be easily generated and integrated in the graphics. $195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Nov 85) ★'85 Eddy

MacModel is an economical 3-D package with shading. Somewhat ★★★ sketchy Mac interface, shading speed slow (but acceptable), grainy image resolution. On-line help screens are a welcome addition. Frequent updates and low price make this a reasonably good buy. $40. A.P.P.L.E. CO-OP, 290 SW 43rd St., Renton, WA 98055. NCP (Aug 86)

MacPaint hasn't lost its shine after all these years. Still one of the ★★★★½ best freehand graphics tools. Version 2.0 supports multiple windows, design templates, and a magic eraser to correct corrections. Requires 512K and second disk drive. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Jul 88) ★'85,'87 Eddy

Mac3D 2.0 is a feature-laden 3-D program with a MacDraw-like ★★★★ interface. PostScript-resolution shading with six variable light sources, user-definable tools, and many more features make this a powerhouse. $249. Challenger Software, 18350 Kedzie Ave., Homewood, IL 60430. NCP (Jan 87)

MapMaker v. 3.0 is a digital cartographer that charts demographic ★★★★½ and marketing information on a geographic basis. Wide variety of amps available, some at an additional cost. Requires 512K. $349. Select Micro Systems, 40 Triangle Center, Yorktown Heights, NY 10598. NCP (Aug 88)

MGMS: Professional CAD for Macintosh offers more than 200 ★★★★ functions. Very complete, capable program. Groups, Dimension, Libraries, etc., are standard. Sometimes confusing — designed for experienced, professional CAD user, not the novice. Full plotter support. 512K+. $799. Micro CAD/CAM, 3230 Overland Ave., Los Angeles, CA 90034. NCP (Nov 87) ★'87 Eddy

MiniCad v. 3.0 is a pro-level CAD package. Vast array of features, ★★★★ many accessible only through Command/Shift/Option key combinations. Works in 2-D or 3-D with easy transition from one to the other. MacDraw-like interface makes it easy to learn and use. Requires 512K+. Diehl Graphsoft, 8370 Court Ave., Suite 202, Ellicott City, MD 21043. CP (Oct 87)

Phoenix 3D is an economical 3-D drawing package, with features ★★★★ that belong in a more expensive program. Multiple light sources, fine object placement and orientation control, and a good selection of shapes. $49.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Oct 86)

PictureBase is a powerful graphic librarian. You can store paint and ★★★★½ PICT formatted items and attach keywords for later search and retrieval. $69.95. Symmetry, 761 E. University Dr., Mesa, AZ 85203. NCP (Sep 87) ★'86 Eddy

PixelPaint is a color paint program with customizable palettes and ★★★★½ lots of special effects. Slow OPEN and SAVE. Requires Mac II and 8-bit video card. $495. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (May 88)

Post Art I is a collection of signed originals on disk. Overall, a pretty ★ useless collection in terms of clip art. Meant for hanging prints on a wall. Requires a program that reads Encapsulated PostScript files. $69.95. Olduvai, 7520 Red Rd., So. Miami, FL 33143. NCP (Aug 88)

The Print Shop makes it easy to create greeting cards, signs, ★★★½ banners, and letterheads. Uses its own special graphics and can import Paint files. Hard-disk users get version 1.02 or higher. $79.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Sep 87)

Slide Show Magician 1.3 is useful for creating full screen audio-★★★ visual presentations on the Mac. Frame branching, improved editing capabilities, external cassette recorder synchronization, and digitized sound capabilities make this much more powerful than the original. $59.95. Magnum, 21115 Devonshire St., Chatsworth, CA 91311. CP (Mar 86)

Space Edit is a 3-D CAD program. Display shows top, front, side, ★★★½ and axonometric views of an object, all at once or one at a time. Has standard CAD features plus zoom, exploded view, animated flyover. Suppression of hidden lines is very slow. Requires 1M+. $625. Abvent, 9903 Santa Monica Blvd., Beverly Hills, CA 90212. CP (Jul 87)

Storyboarder produces working animated storyboards for use in ★★★★ film and video production. Imports graphics from MacPaint; allows screen masking to simulate television, 35mm or 70mm screen widths; allows limited animation and special effects. $495. American Intelliware, PO Box 6980, Torrance, CA 90504. CP (Nov 86)

SunShine Graphics Library is a collection of 46 400K disks (to ★★★★ date) with a wide variety of high-quality digitized images stored as MacPaint files. $20/disk: discount scale for multiple purchases. SunShine, Box 4351, Austin, TX 78765. NCP (Feb 87)

SuperPaint is a powerful, easy-to-use graphics program with all the ★★★★★ best features of MacPaint and MacDraw — and then some. LaserBits provides 300 dpi magnification and there are 40 editable brush shapes. Requires 512K+. $149.95. Silicon Beach, 9580 Black Mountain Rd., PO Box 261430, San Diego, CA 92126. NCP (Feb 87) ★'87 Eddy

TrueForm takes a scanned image of a paper form and turns it into ★★★★½ an electronic equivalent, complete with fields for entering data. It can automatically sum numeric fields. Requires external 800K drive. $495; run-time version, $295. Spectrum Digital Systems, 2702 International Lane, Madison, WI 53704-3122. NCP (May 88)

VersaCAD is a powerful CAD program that doesn't show any of its ★★★★ MS-DOS roots. Excellent element manipulation, full plotter support. Library user interface is crude. Requires 1M+. $1995. VersaCad, 2124 Main Street, Huntington Beach, CA 92648. NCP (Jul 88)

VideoWorks II is an easy-to-use animation tool — the best avail-★★★★½ able on the Mac. Has an Overview mode that acts as a slide show carousel for presentations. Works in color on the Mac II. $195. Requires 1M+ and an 800K drive. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Mar 88) ★'85, '87 Eddy

VideoWorks II Clip Animation, Clip Charts, Black and White Mov-★★★★ ies, and Clip Sounds are four separate aids to help you construct movies and business presentations. Requires VideoWorks II. $49.95 to $59.95. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Aug 88)

WetPaint consists of two 3-disk volumes of very high quality clip ★★★★★ art. Also includes the Art Roundup DA, a good art browser/editor. Volume 1 or 2, $39 each; both volumes, $59. Available in PictureBase format for $15 extra per volume. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Sep 87)

World-Class Fonts! comes in two volumes of three disks each. ★★★★½ Includes all the Mac the Knife fonts and a lot more, including two useful utilities. This is now the best collection of ImageWriter fonts available. Each volume: $39; both volumes: $59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Dec 86)

DESKTOP PUBLISHING

Interleaf Publisher is a speedy multiuser layout system for pro-★★★½ ducing large, complicated documents. Has strong global

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formatting ability but can't use downloadable fonts. Requires Mac II with 5M of RAM and 40M hard disk, $2495. Interleaf, 10 Canal Park, Cambridge, MA 02141. NCP (May 88)

JustText is a professional level word processor and page makeup program that generates PostScript output. Comes with a set of LaserWriter utilities that allow total manipulation of art and text. Requires LaserWriter or other PostScript compatible output device. $195. Knowledge Engineering, GPO Box 2139, New York, NY 10116. NCP (Dec 85)

MacTEX (v. 2.0) is the TeX environment of choice for hardcore TeX users on the Macintosh. Very intimidating for others. Painfully slow and visually unattractive. Requires 1M+. $750. FTL Systems, 234 Eglington Ave. East, Toronto, Ontario M4P 1K5, Canada. NCP (Apr 88)

PageMaker v. 3.0 retains its paste-up approach to page layout. New features include auto text flow, style sheets, and spot color support. The standard keeps getting better. Requires 1M+ hard disk. $595. Aldus, 411 First Ave. South, Seattle, WA 98104. NCP (Aug 88) (★) '85, '87 Eddy.

Portfolio: Designs for Newsletters provides over 20 templates for 2-page newsletters with pre-set columns, headlines, graphics, and captions. Documentation provides excellent tutorial in page design. Requires 512K+; PageMaker. $79.95. Aldus, 411 First Ave. S., Suite 200, Seattle, WA 98104. NCP (May 87)

QuarkXPress is a high-end desktop publishing application. Layout is done in block format; powerful lining tool ties blocks together. $695. Quark, 200 S. Jackson, Denver, CO 80209. NCP (Sep 87)

Ragtime is an "Integrated Page Processor" with text, graphics, and built-in spreadsheet. Flow text automatically from one frame to another. Spreadsheet has a full set of functions. Excellent, easy-to-use program. Requires 512K+. $395. Orange Micro, 1400 N. Lakeview, Anaheim, CA 92807. NCP (Aug 88)

Ready, Set, Go! 4 has an elegant interface and excellent manual. Powerful text wraparounds, fast word processor with hyphenation and spelling check and custom stylesheets. Requires 1M+. $495. Letraset, 40 Eisenhower Dr., Paramus, NJ 07652. NCP (Feb 88) ★'86 Eddy

TeXtures (v. 1.0) is an implementation of TeX, the big daddy of typesetting programs. Good for people trained on mainframes in the early days. Otherwise very sticky with a high learning curve. Requires 512K+. $495. Kellerman & Smith, 534 S.W. 3rd Ave., Portland, OR 97204.. NCP (Apr 88)

COMMUNICATIONS

AppleShare is the long-awaited file sharer from Apple. Software-based, AppleShare requires you to dedicate a Mac and a hard disk to run it. Allows users on the network to protect things from other users on the folder level. Interface to network is provided at a revised Finder. $799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (May 87)

ComServe allows you to share a Hayes-compatible modem over an AppleTalk network. You can call out, but you can't call in. Works with most telecommunications packages. $195 per server. Infosphere, 4730 SW Macadam Ave., Portland, OR 97201. CP (Feb 88)

Desktop Express is a simple-to-use, semi-automated program for using MCI Mail and Dow Jones News/Retrieval. Performance is traded off for ease of use. Requires 512K+. $149. Dow Jones, PO Box 300, Princeton, NJ 08543. NCP (Jan 88)

HomePak is a package consisting of HomeTerm, an excellent, simple telecommunications program with strong macro features; HomeFind, an electronic filer as bad as HomeTerm is good; and Apple's Edit, a simple, non-HFS-compatible text-file editor. $49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Sep 86)

InBox is an easy-to-use mail system. It's called up from a desk accessory. Has a very slick interface. Dedicated Mac not required. $350 for starter set which includes one Administrator disk and three Connection disks. Additional Connections cost $125 each. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (May 87) ★'86 Eddy

InTalk comes with its own communications command language able to do unattended sessions. Supports Xmodem and MacBinary. Has a macro key function. Many sample setup documents and command language files provided. $195. Palantir, 12777 Jones Rd., Houston, TX 77070. NCP (Prem)

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MINIFINDERS



LapLink Mac quickly transfers data to and from the MS-DOS and Mac environments. Kit contains a cable and software. Control of transfer is on the IBM side. Version: 1.2. Requires 512K. $139.95. Traveling Software, 19310 North Creek Pkwy., Bothell, WA 98011. NCP (Aug 88)

MacTerminal provides basic telecommunications and terminal emulation. Doesn't have macros nor any sort of auto re-dial/auto log-on capability. Best for those needing faithful VT100 or IBM 3278 emulation — it is superb at those. $125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Prem)

Microphone is a high-powered terminal program that's easy enough for novices. Very powerful command language allows full automation of communications, if desired. $149. Software Ventures, 2907 Claremont Ave., Berkeley, CA 94705. NCP (Jul 86) ★'86 Eddy

Microsoft Mail is an electronic mail system that runs under AppleTalk. Supports file transfers across the mail system. Full online help facility. Also includes "While you were out" messages. Desk accessory based. Prices determined by number of users licensed. One to four users, $299.95; five to 10 users, $499.95; 11 to 20 users, $749.95; 21 or more users, $949.95. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (May 87) ★'87 Eddy

Red Ryder is a full-featured telecommunications program that supports MacBinary, Xmodem, and Kermit. Has big screen support, auto procedure creator, and up to 30 keyboard macros. This is the cream of the crop (in late 87). $80. Freesoft, 150 Hickory Dr., Beaver Falls, PA 15010. NCP (Dec 87) ★'87 Eddy

Smartcom II balances power and ease of use. Capable of unattended operation and has a very powerful command language. Supports MacBinary, Xmodem, and Hayes Verification protocols. The large screen buffer can easily be archived. $149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jul 86) ★'85 Eddy

Telescape is the power telecommunicator's terminal program. Can be configured to emulate any terminal. The documentation does not adequately explain the many features. $125. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 86)

TOPS is a file server designed to network computers with different operating systems. Supports Macs, MS-DOS compatibles, and UNIX. Access to files and subdirectories is transparent to the user; they appear as Mac folders. Only handles ASCII or Text files. $149 for Mac version. $389 for PC's (comes with add-on card). TOPS, 2560 Ninth St., Berkeley, CA 94710. Serial number protected. (May 87) ★'87 Eddy

VersaTerm features include DEC VT100 and VT52, Tektronix 4014 graphics terminal and Data General DG200 emulation. Supports Xmodem and MacTerminal Xmodem protocols and MacBinary. VersaTerm is easy to use and well-documented. $99. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mt. Penn, PA 19606. CP (Prem)

VersaTerm-Pro is a very powerful terminal program with several special features. Does one of the best VT100 emulations available and specializes in high-quality Tektronix 4014 and 4105 emulation. A pro's tool. Requires 512K+. $295. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mt. Penn, PA 19606. NCP (Apr 87)

WORD PROCESSORS

Document Compare allows users to compare any two MacWrite 4.5, ASCII, or MDS documents. Differences in spelling, punctuation, formatting, and wording are detected. Documents can be printed out with differences highlighted. $99. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (May 86)

Document Modeler can automate much of a professional office's correspondence. Comes in two parts: Template Maker and Document Maker. Initial setup requires time and is complex. $299.95. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (Mar 87)

Doug Clapp's Word Tools is a useful punctuation and style editing program. It won't turn you into a Proust, but it will help you make your writing cleaner and clearer. Word counts among different formats show discrepancies, but not to worry. Requires 512K+. $79.95 Aegis Development, 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sep 87)

Expressionist is a powerful DA that allows you to create complex mathematical equations from within an application. Equation manipulation has never been easier. $79.95. Allan Bonadio Associates, 1579 Dolores St., San Francisco, CA 94110. NCP (Jul 87)

FullWrite Professional combines outlining and word processing with page layout and drawing. its many features translate into sluggish performance unless you have a lot of extra RAM. Impressive. Version 1.0. Requires 1M. Mac II and MulitFinder friendly. $395. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502. NCP (Sept 88)

Graham Speller is a desk accessory-based spelling checker. Includes macro feature. Good guesser in interactive mode. Clumsy interface. Version 1.1. $44.95. Graham Software, 8609 Ingalls Circle, Arvada, CO 80003. NCP (Aug 88)

Kadmos Greek Font is a full character set of ancient Greek that prints on any PostScript printer. Requires learning new typing skills, but excellent quality makes it worth the effort. $85. Allotype Typographics, 1600 Packard Rd., Ann Arbor, MI 48104. NCP (Oct 87)

Laser Author is a high-powered, technically oriented word processor. Good math setting capability. Has style sheets, word count, and page layout capability. $199.95. Firebird Licensees, PO Box 49, Ramsey, NJ 07446. NCP (Mar 87)

Liberty Spell Checker is a fast, effective, interactive checker. The dictionary is smaller than average, but well chosen. Unfortunately, it has a few misspelled words. $59.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Oct 86)

Lookup is an on-call, quick single-word spelling checker. Designed for the way writers really work. Uses the 93,000+ word Spellswell dictionary. $49.95. Working Software, 321 Alvarado, Suite H, Monterey, CA 93940. (Dec 87) NCP

MacGAS is a DA spelling checker with both a small and extended dictionary. Its best point is the excellent thesaurus, provides antonyms & glossary. A slow checker. $99. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. CP (Oct 86)

MacProof is a grammar, style, and spelling checker that's like having your own personal copy editor. Grammar rules are fixed, and you may not agree with the choices. The program only suggests corrections, it doesn't make them for you. And the checking process can be slow if your document is long. $195 for standalone version; $2500 for networked version. Automated Language Processing Systems, 190 West 800 North, Provo, UT 84604. NCP (Apr 87)

Macspell+ v. 1.10 is a spelling checker that installs as a desk accessory. Works easily with MacWrite 4.5 and 2.2 and Word, but has some drawbacks. New version just available. Requires 512K+, two drives or hard disk. $99. Creighton Development, 16 Hughes St., Irvine, CA 92718. NCP

MacWrite is starting to show its age. While still a good, basic program, it's out-performed by its competition. Probably enough for the occasional user. Version 5.0 includes Command key equivalents and spell checker. Requires 512KE+. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Jun 88) ★'85 Eddy

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MINIFINDERS

MergeWrite is a mail-merge program for MacWrite (also works with ★★★½ ASCII files). Program combines names and addresses from a data file into predefined fields in a form letter. Also allows simple conditional IF-THEN-ELSE equations. $49.95. Software Discoveries, 137 Krawski Dr., South Windsor, CT 06074. NCP (Dec 87)

MindWrite integrates outlining and word processing better than ★★★★ anyone. Version 1.1 fixes many problems of the earlier version. Sophisticated search and select options. Unimpressive speed. $295. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Feb 88)

QUED/M v. 2.01 is an excellent text editor that saves docu- ★★★★½ments in a form readable by most computers and printers. Doesn't support graphics or multiple fonts. Programming language allows creation of database. $129. Paragon Concepts, 4954 Sun Valley Rd., Del Mar, CA 92014. NCP (Mar 88)

QuickWord is a word processing accessory that adds sophisticated ★★★½ glossaries to MacWrite. Simple to install and use, yet powerful and efficient. $49.95. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. NCP

Scriptor is designed for producing standard format scripts. Starts ★★★★ with a Word document. As you change your Word document, Scriptor will reformat, renumber, and reprint the script. Supports LaserWriter and daisywheel printers. $295. Screenplay Systems, 348 E. Olive Ave., Suite F, Burbank, CA 91502. NCP (May 87)

Spelling Champion is a fast and accurate batch-type spelling ★★★★ checker. Back-up feature allows you to undo corrections in a paragraph. Works only with MacWrite 4.5. $39.95. Champion Software, 6617 Gettysburg Dr., Madison, WI 53705. NCP (Oct 86)

Spelling Coach Professional is a desk accessory and stand-alone ★★★★½ spelling checker as well as thesaurus. Includes dictionary definitions. Off-the-wall phonetic guesses. Version 3.0. $195. Deneba Software, 7855 N.W. 12th Street, Suite 202, Miami, FL, 33126. NCP (Aug 88)

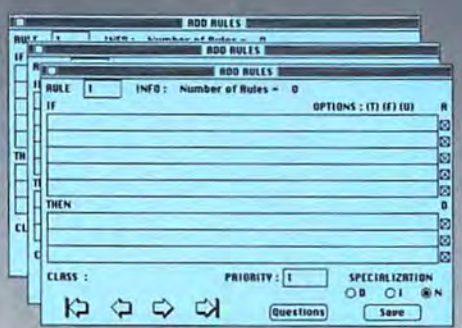
Spellswell is a stand-alone batch spelling checker. Also checks for ★★★★½ punctuation and other errors. Good dictionary, thorough checking, simple interface. Weak guessing. Version 2.0. $74.95. Working Software, 321 Alvarado St., Monterey, CA 93940. NCP (Aug 88)

Thunder! is a desk accessory spelling checker. Includes macro ★★★★½ features. Fairly fast, good guessing of misspelled words. Small dictionary. MultiFinder hostile. Version 1.1. $49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Aug 88)

Word Finder is an electronic thesaurus that won't replace your ★★★½ trusty Roget's, but is still useful for checking synonyms on the fly. Large respectively. Version 2.0. Requires 512K. Mac II and MultiFinder friendly. $59.95. Microlytics, 300 Main St., Rochester, NY 14445. NCP (Sept 88)

Word 3.01 fixes many of the bugs of the justly maligned 3.0. Still, ★★★★½ it's the most feature-laden word processor around. Also has Microsoft's somewhat unusual view of what the Mac interface is. Esoteric command key combinations. Requires 512K+. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073. NCP (Mar 88)

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WorksPlus Spell is a speedy spelling and hyphenation checker ★★★★½ for Microsoft Works. It includes a glossary for abbreviations and time/date stamping. The biggest drawback is its limitation to one program. $59.95. Lundeen & Associates. PO Box 30038, Oakland, CA 94604. NCP (Oct 87) ★'87 Eddy

Write is a "beginner's" version of Word 3.0. More features ★★★ than some word processors in its class, but not all of the features work well. Poor value, and expensive upgrade path to Word. $175. Requires 512K+. Microsoft, 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717. NCP (May 88)

WriteNow for the Macintosh has many of the features of MacWrite ★★★★½ and then some, including the ability to work in columns. Has built-in spelling checker with 50,000-word dictionary. $175. T/Maker, 1973 Landings Dr., Mountain View, CA 94043. NCP (Mar 87)

SYSTEM SOFTWARE

HyperCard is a totally unique program for the Mac. It uses an index ★★★★ card metaphor and it contains a programming language, HyperTalk. Requires 1M+. Free with new Macs, otherwise $49.95. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Dec 87) ★'87 Eddy

System Tools 5.0 is the Apple System upgrade for Mac Plus, SE, ★★★★ and II owners. It contains MultiFinder (a multitasking environment), a LaserWriter spooler, and a Control Panel resource to add color on the Mac II desktop. Takes 1M+. $49. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Mar 88)

HYPERCARD

Business Class is a HyperCard stack that contains world travel ★★★½ information and itinerary planning. Uses maps to locate countries of interest, but it lacks United States domestic travel information. Requires 1M+ and HyperCard. $49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar 88)

City to City imparts travel information on 31 U.S. cities including ★★★★ details on hotels, restaurants, and nightlife. Helps plan an itinerary. Requires HyperCard, 2 disk drives, and a printer. $49.95. Activision, 3885 Bohannon Dr., Menlo Park, CA 94025. NCP (Sep 88)

Focal Point is a HyperCard stack that ties together a calendar, ★★★★½ phone log, client accounts, and more in one easy-to-use organizational tool. Requires 1M+ and HyperCard. $99.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar 88)

HyperBook Maker adds many of the printing utilities that Hyper- ★★★ Card lacks. Best used to figure out signature breaks to print pamphlets. Version 1.1a reviewed. Mac II and MultiFinder friendly. $59.95. Ideaform, 612 West Kirkwood, Fairfield, IA 52556. NCP (Jun 88)

HyperDA lets you browse through HyperCard stacks through a desk ★★★★ accessory. A true equalizer for 512K Mac owners who cannot normally access stackware. Doesn't support global vari-

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MINIFINDERS

ables. Requires 512K+. $69. Symmetry, 761 E. University Dr., Mesa, AZ 85203. NCP (May 88)

HyperTutor is a stack that teaches HyperTalk, Hypercard's programming language. Uses an interactive Test Mac on each card to write scripts. A variety of windows makes it good for both beginners and advanced programmers. $49.95. Teligraphics, 936 Sir Francis Drake Blvd., Kentfield, CA 94904. NCP (Apr 88)

Reports endows HyperCard stacks with the power to sort and impart information like a database. Customizing reports is difficult. Requires HyperCard. $99.95. Activision, Inc., 3885 Bohannon Dr., Menlo Park, CA 94025. NCP (Aug 88)

ORGANIZATIONAL TOOLS

Acta is an outline processor in desk accessory format. It has practically all the power of a standalone program, and then some. Can save files as Acta outlines, MacWrite or text files. $59.95. Symmetry, 761 E. University Dr., Mesa, AZ 85203. NCP (Jul 86)

AEC Information Manager helps middle-level paper-pushers keep track of projects from start to finish. Has date calculations, scheduling graphs, and alarms. Overpriced. Version 1.21 reviewed. Requires 1M+. $695. AEC Management Systems, 20524 Amethyst Lane, Germantown, MD 20874. NCP (Jul 88)

Calliope is a new type of outlining program. Chunks of information are manipulated as small "light bulbs" containing text. Related elements can be graphically connected, and their text information viewed in hierarchical order. Text files can be created for MacWrite editing. $99. Innovision, PO Box 1317, Los Altos, CA 94023. NCP (Sep 86)

Comment (previously known as Memorandum) is the electronic equivalent of Post-it Notes. Notes can be attached to many different types of documents. Doesn't work well with SuperPaint or Microsoft Works. An alarm clock feature alerts users of Timed Notes. $99.95. Deneba Systems, 14206 SW 136th St., Miami, FL 33186. NCP (Nov 87)

DecisionMap organizes data to facilitate decision making. Unique weighting abilities make this a powerful tool. The decision analysis process is long and sometimes complex, but never difficult. $145. SoftStyle, 7192 Kalanianole Hwy., Honolulu, HI 96825. CP

Design is a powerful organizational tool. It goes beyond mere flowcharting. Graphically depicts relationships between systems. Complex, detailed program aimed at software pros. $250. Meta Software, 150 CambridgePark Dr., Cambridge, MA 02140. NCP (Apr 88)

FamilyCare is a "yuppie" handbook to childhood diseases. The rule-based expert system gives advice based on symptoms. Ailments and diseases run the gamut from acne and appendicits to wheezing and yeast infections. Lacks graphics. Version 1.0. Requires 512K. $99. Lundin Laboratories, 29451 Greenfield Rd., Southfield, MI 48076. Mac II and MultiFinder friendly. NCP (Sept 88)

FlowMaster charts your ad dollars in print, TV, billboard, and other mediums. Analyzes cost/benefit of a campaign in terms that even jaded Mad. Ave. execs will find innovative. Includes

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MINIFINDERS



bar-chart and tabular output. Requires 512K+. $495. Select Micro Systems, 40 Triangle Ctr., Yorktown Heights, NY 10598. NCP (Jan 88)

GeoQuery puts your database on the map by accessing Zip code ★★★★ information. Comes with maps of the U.S. Other atlases available. Version 1.0 reviewed. Requires 1M+ and second disk drive. $349. Odesta, 4084 Commercial Avenue, Northbrook, IL 60062. NCP (Jul 88)

Guide allows you to "cross reference" from within a document ★★★★½ using hypertext. You can set up words or sections of the document so that double-clicking brings up explanatory material, graphics, and other useful items. The word processing and formatting functions, however, are limited. $135. OWL International, 14218 NE 21st St., Bellevue, WA 98007. NCP (Apr 87)

Instant Expert is an excellent way to learn the mechanics of creat- ★★★½ ing an expert system. The inference engine (that ultimately finds the answer) is visible. Lacks a true Mac interface. Version 1.0. $49.95. Human Intellect Systems, 1670 S. Amphlett Blvd., Suite 326, San Mateo, CA 94402. NCP (Jan 88)

MacProject allows a user to plan and track a project from beginning ★★★ to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. $195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Mar 86)

MacSMARTS can create small, standalone expert systems. Fea- ★★★ tures hypertext connections to Paint, PICT, SYLK, and text files. Still a little buggy. Requires 512K+. Version 1.03. $149.95. Cognition Technology, 55 Wheeler St., Cambridge, MA 02138. NCP (Jan 88)

Micro Planner Plus is a great project management system. Out- ★★★★½ standing analysis capability. Memory based, making it much faster than the original. Includes a font menu. Even saves reports out in MacDraw format for further work. Uses standard print drivers. HFS compatible. $495. Micro Planning International, 235 Montgomery St., San Francisco, CA 94104. NCP (Dec 86)

MORE is an incredibly powerful outline processor with gobs of great ★★★★★ features: instant charts, math capabilities, multiple windows, font and style control, templates, and more. Prints outlines in any of several standard formats, even in color. Requires 512K+. $395. Symantec, 117 Easy St., Mountain View, CA 94043. NCP (Jan 87) ★'86 Eddy

PowerPoint is a comprehensive presentation-creation tool. Han- ★★★★ dles 35mm slide and overhead transparency formats. Good graphics and text editing capabilities. Requires 512K+. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Aug 87) ★'87 Eddy

STELLA for Business is a simulation tool used to model comp- ★★★★½ lex business systems. Requires that you master a discipline called "system dynamics." Requires 512K+. Mac II version available. $350. High Performance Systems, 13 Dartmouth College Hwy., Lyme, NH 03768. NCP (Jun 88)

SuperExpert is an expert system shell that induces rules from ★★½ examples. Rules become unwieldy when many criteria and examples are used. Overpriced. Version 1.4 reviewed. Re-

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MINIFINDERS



quires 512KE. $199.95. Softsync, 162 Madision Avenue, New York, NY 10016. NCP (Jul 88)

DESK MANAGERS

Executive Office is a jack of all trades office application. Good
𝄞𝄞𝄞½ database, word processing, graphics, and minispreadsheet. Available on 400 or 800K disks; get the 800 if you can. $249.99. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Mar 87)

Front Desk lets small businesses and offices easily keep track of
𝄞𝄞𝄞 personnel schedules, activities, and payments. The program can keep track of up to 15 employees, functioning as a day-, week-, and month-at-a-glance calendar. $149.95. Layered, 529 Main St., Boston, MA 02129. NCP (Dec 85)

MockPackage+ is a set of extremely powerful DAs. Includes a text
𝄞𝄞𝄞𝄞½ editor, text printer (supports LaserWriter), charter, terminal, and EZmenus. HFS compatible. $35. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Mar 87)

My Office lets you handle your files and papers in much the same
𝄞𝄞𝄞𝄞 way you did before you got a computer. Excellent use of graphic symbols. $129.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Prem)

Quickset is a set of desk management and organizational tools that
𝄞𝄞𝄞 can be used as desk accessories or applications. Functions include note filer, card filer, calendar, phone dialer, financial, and statistical calculators, and a file encryptor. $49.95. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. NCP (Dec 85)

SideKick 2.0 beefs up original SideKick DAs and adds two major
𝄞𝄞𝄞𝄞 new ones — MacPlan, (formerly Click-On Worksheet) and Outlook, a full-featured outliner. Also comes with seven applications to support the desk accessories. $99.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Jun 87)

Smart Alarms is the best reminder system for the Mac. Easy to use,
𝄞𝄞𝄞𝄞½ versatile and, well, smart. This self-running DA automatically reminds you of anything you enter into its Reminder file, giving you a wide range of useful advance warning options. $49.95. Imagine Software, 19 Bolinas Rd., Fairfax, CA 94930. NCP (Oct 86)

Top Desk is a set of 7 self-installing (and self-removing) DAs. Menu
𝄞𝄞𝄞𝄞½ Key adds Command key sequences to programs; View allows looking at and moving data between up to 8 MacWrite documents; also included are BackPrint, Touch 'n' Go, Blank, Encrypt, and Launch. $59.95. Cortland Computer, PO Box 9916, Berkeley, CA 94709. NCP (May 86) ★'86 Eddy

UTILITIES

Accessory Pak 1 is a set of useful applications and utilities. Paint
𝄞𝄞𝄞𝄞 Cutter alone is worth the price. That program allows users to browse and manipulate full page MacPaint documents. $39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Nov 85)

AutoSave DA is insurance against system crashes. It saves your
𝄞𝄞𝄞 work automatically at intervals from 1 to 99 minutes. Compatible with many applications, but not recommended for use with databases. $49.95. Magic Software, 1706 Galvin Rd. S., Bellevue, NE 68005. NCP (Jan 88)

Capture saves any portion of a Macintosh screen to the Clipboard or
𝄞𝄞𝄞𝄞𝄞 as a PICT file. Works in color on the Mac II. Requires 512K+. MultiFinder friendly. $59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 88)

Colorizer adds pigments to the desktop and black and white appli-
𝄞𝄞𝄞 cations. Also colors PICT graphics. System resources include saving and printing color screens. A useful novelty that'll run its course as developers add color to apps. Requires Mac II. $49.95. Palomar Software, PO Box 2635, Vista, CA 92083. NCP (Jan 88)

Copy II Mac does efficient sector and bit copies and in its latest
𝄞𝄞𝄞𝄞𝄞 version can back up virtually all Mac software. Features graphic displays of copy progress. Comes with MacTools, a multi-use utility that can recover many damaged files. $39.95. Central Point Software, 9700 SW Capitol Highway, Portland, OR 97219. NCP (Apr 86) ★'85 Eddy

DiskExpress unfragments disk volumes by reorganizing data into
𝄞𝄞𝄞𝄞 continuous sectors and arranging files to slow down further fragmentation. Works with MacServe, floppy drives, and most hard drives. Requires 512K+. $39.95. ALSoft, Box 927, Spring, TX 77383. NCP (Feb 87)

DiskFit is a utility for backing up and restoring hard disk files. Cre-
𝄞𝄞𝄞𝄞½ ates a "SmartSet" of floppy disks so incremental back-ups only update files modified since the last back-up procedure. Backs up to floppies or another hard disk. Requires 512K+. $74.95. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (Jun 87)

DiskQuick is an easy-to-use cataloging program. Criteria selection
𝄞𝄞𝄞𝄞 option for generating subcatalogs. Requires 512K+. $49.95. Ideaforms, PO Box 1540, Fairfield, IA 52556. NCP (Apr 87)

Disk Ranger is a speedy cataloging program that doubles as an
𝄞𝄞𝄞𝄞 efficient labelmaker. Comes with pinfeed labels. Works with regular and hard disks. Can catalog HFS systems. $34.95. Graham Software, 8609 Ingalls Circle, Arvada, CO 80003. NCP (Mar 86)

DiskTools Plus is a set of 8 useful DAs and applications. Earlier
𝄞𝄞𝄞𝄞𝄞 version was sold as Battery Pak. The DA Disk Tools II is a Finder replacement. Also included are an RPN calculator, Phone Pad, and Calendar Manager. Requires 512K+. $49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Mar 88)

DiskTop is a desk accessory Finder replacement of extraordinary
𝄞𝄞𝄞𝄞½ power and ease of use. Comes with the useful LaserStatus DA and Widgets application. The extras alone are worth the price. Requires 512K+. Upgrade from version 1.0, $7; $10 with new manual. $49.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Aug 87)

Dubl-Click Calculator Construction Set lets users design person-
𝄞𝄞𝄞𝄞½ alized calculators with a variety of standard and special functions. Finished calculators can be saved as installable desk accessories or as clickable applications. $59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Apr 86)

Eureka: The Solver is a free-form numerical equation solver. Stand-
𝄞𝄞𝄞 ard trigonometric and logarithmic functions are available as is treatment of imaginary and complex numbers. $195. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Mar 88)

Fastback for the Macintosh is hard disk back-up software that is
𝄞𝄞𝄞 very quick if not very efficient. Doesn't automatically exclude applications. Creates a separate catalog disk. $99.95. Fifth Generation Systems, 1322 Bell Ave., Tustin, CA 92680. NCP (Apr 88)

FedIt Plus is the file and disk editor for everyone, from newest Mac
𝄞𝄞𝄞𝄞𝄞 owner to oldest. It can do more for your disks and files than any other application. Can recover deleted MFS files. If you own a Mac, get it. HFS-compatible. $49.95. MacMaster Systems, 108 E. Fremont Ave., #37, Sunnyvale, CA 94087. NCP (Sep 86) ★'86 Eddy

Findswell is an indispensible utility that installs a new button in the
𝄞𝄞𝄞𝄞𝄞 Open Dialog box of virtually every Macintosh application. Press the button, type a search string, press Find and Findswell searches for any files that match. Click Open or double-click to open the correct file. Requires 512K+. $49.95. Working Software, 321 Alvarado, Monterey, CA 93940. NCP (Nov 87) ★'87 Eddy

MINIFINDERS



1stAid Kit HFS recovers lost or damaged files from floppy or hard
★★★★½ disks. An excellent manual-turned-textbook actually teaches the Hierarchical File System. Requires 1M+. Version 2.2 reviewed. $99.95. 1st Aid Software, 42 Radnor Rd., Boston, MA 02135. NCP (Jun 88)

FlashBack is a utility to back up HFS hard disks onto floppies. A
★★★ unique graphic display of the HFS directory facilitates file selection. The program can handle files larger than 800K. $59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Nov 86)

Font/DA Juggler Plus gives you unlimited access to almost any
★★★★ number of fonts, desk accessories, and sounds. Uses hierarchical menus. $59.95. Alsoft, PO Box 927, Spring, TX 77383. NCP (May 88)

Glue adds a print-to-disk capability to many programs. ImageSaver
★★★★½ installs as printer driver; Viewer allows copying and printing of Glue files. Handy utility for desktop publishers. $59.95. Solutions International, Box 989, Montpelier, VT 05602. NCP (Dec 86)

Hard Disk Util uses patch files to allow users to mount and run
★★★★½ specified programs on their hard disks. The list of patches is constantly expanding. $89.95. FWB Software, 2040 Polk St., San Francisco, CA 94109. NCP

HFS Backup ranks as one of the preferred hard disk back-up utili-
★★★★½ ties. Back up by file/folder or last changes. Back-up specifications can be saved as templates. Good graphic interface. Reliable program. $49.95. PCPC, 4710 Eisenhower Blvd., Tampa, FL 33634. NCP (Dec 86)

HFS Locator Plus is *the* essential HFS desk accessory. It
★★★★ can search for a file by name or date of creation, create folders, move files from one folder to another, set a program to launch while in an application. $39.95. PBI Software, 1163 Triton Dr., Foster City, CA 94404. NCP (Sep 86)

Icon-It! v. 1.0 lets you create icons to use as an alternative to menu
★★★★½ commands. Comes with 47 icon templates or you can create your own. $79.95. Olduvai Software, 7520 Red Rd., South Miami, FL 33143. NCP (Feb 88)

LabView is a graphical programming environment that creates "vir-
★★★★ tual instruments" to perform calculations, acquire laboratory data, and control instrumentation. Slow. Version 1.1 reviewed. $1900. National Instruments, 12109 Technology Boulevard, Austin, TX 78727-6204. NCP (Jul 88)

LaserServe is a printer spooler for AppleTalk networks. After instal-
★★★★★ lation all operations done via a desk accessory. Works with both MacServe and TOPS. Requires 512K+ and 800K drive or hard disk. $95 per node. Infosphere, 4730 SW Macadam Ave., Portland, OR 97201. NCP (Feb 87)

Mac Disk Catalog II is a utility that will quickly organize a moderate
★★★★ size disk library. Easy to use with powerful reporting and label-making features. $49.95. New Canaan MicroCode, 136 Beech Rd., New Canaan, CT 06840. NCP (Dec 85)

MacEZ-Mill is a CAM program that controls industrial milling ma-
★★★★½ chines. Quickly writes part programs that previously only very experienced designers could execute. $6000. Bridgeport Machines, 500 Lindley Street, Bridgeport, CT 06606. CP (Jul 88)

MacFlow is a design tool created for programmers. Traditional flow-
★★★½ charting symbols are linked together, and a symbol can be connected to a separate flowchart file. Symbols can't be edited, precluding using MacFlow for other applications. $195. Mainstay, 5211-B Derry Ave., Agoura Hills, CA 91301. NCP (Apr 87)

MacInUse tracks time spent in applications and saves info as text
★★★★★ files. Installs on any disk, works in background. MFS, HFS compatible. Extremely valuable for tax purposes, client records, etc. $79. SoftView, 4820 Adohr Lane, Camarillo, CA 93010. NCP (Jan 87) ★'86 Eddy

MacLabeler lets users instantly index and print labels for all the
★★★½ disks in a burgeoning collection. Choose border type and orientation of your label; index by folder or document. Starter set of labels is included. $49.95. Ideaform, PO Box 1540, Fairfield, IA 52556. NCP (Prem)

MacNosy is a global disassembler. A very advanced user can use
★★★★★ this program to look into the code of virtually any program. This advanced tool can take you places no other Mac program could dream of going IF you have the skill to guide it. The documentation is sparse. For pros only. $90. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025. NCP

MacSafe is a data file security program that allows you to place
★★★★ multiple files into a "safe," and then you can further protect them through two types of encryption (including DES). Flexible and very easy to use. Allows for installation on hard disk. $149.95. Kent Marsh Ltd, 1200 Post Oak Blvd., Houston, TX 77056. CP (Mar 87)

MacServe converts a Mac and a hard disk into a disk and print
★★★★½ server. Uses the AppleTalk network and is easily hooked up. Users can partition the hard disk into multiple volumes. Runs in the background, so users can work on all machines in the network. $250. Requires 512+. Infosphere, 4730 SW Macadam, Portland, OR 97201. CP

MacTree displays your files in the form of a hierarchical tree. Good
★★★½ idea, poor performance. Can't view tree easily. Good search function. Requires 512K+. $69.95. Software Research Technology, 22901 Mill Creek Dr., Laguna Hills, CA 92653. NCP (Apr 88)

MacZap is a three-part disk and memory utility. It can be used to
★★★★ recover some damaged files and disks, compare disks, analyze disk structure, and make back-up copies of most disks. $60. Micro Analyst, 2505 Roxmoor, Austin, TX 78723. NCP (Jan 86)

Menu Fonts displays the names of fonts in the actual font instead of
★★★ standard Chicago. Won't work with programs that have a nonstandard Font menu or no Font menu. Comes with Lock-Out, a utility that gives password access to your Mac, and FastFormatter, a utility for formatting multiple blank disks. Requires 512K+. $15. Beyond Software, 6069 E. Grant Rd., Tucson, AZ 85712. NCP (Jul 87)

myDiskLabeler is an excellent label maker. It can read directories
★★★★ and use large or small icons or anything desired. Comes with 54 precut labels. $44.95; with color printing ability (on the ImageWriter II), $54.95; with PostScript font capability (on the LaserWriter), $64.95. Williams and Macias, PO Box 19206, Spokane, WA 99219. NCP (Aug 87)

'Ncryptor is a simple safe program that lets users password their
★★★★ files. The same program is used for encoding and decoding. This is one of the best products in its category. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

NightWatch locks up your hard disk by using a floppy start-up disk
★★★★½ that acts as key. Type in the correct password, and access to the hard disk is allowed. Version 1.02. Requires 512KE, a hard disk, and an 800K Drive. Mac II and MultiFinder friendly. $149.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Suite 210, Houston, TX 77056. NCP (Sept 88)

On Cue lets you switch applications without returning to the Finder.
★★★★½ Under MultiFinder, active applications are listed on a pop-up menu. Can also launch directly to a specific document. Version 1.0. Requires 512K. Mac II and MultiFinder friendly. $59.95. Icom Simulations, 648 South Wheeling Rd., Wheeling, IL 60090. NCP (Sept 88)

PackIt III is an essential utility. Primarily used to temporarily "glue"
★★★★½ files together, it can also compress and encrypt. Feeware. $10, $10 for printed manual. Harry R. Chesley, 1850 Union St., San Francisco, CA 94123. NCP (Jan 87)

PowerStation is an extremely easy-to-use, versatile and powerful
★★★★★ Finder substitute. Loaded with power user features. Comes

MINIFINDERS



with Pyro! $59.95. Fifth Generation, 1322 Bell Avenue, Tustin, CA 92680. NCP (Dec 87)

Printworks for the Mac is a comprehensive software-based dot-matrix printer control system. Optimizes printing from different applications, and easy to use. Requires 512K+. $75. SoftStyle, 7192 Kalanianaole Hwy., Honolulu, HI 96825. NCP (Aug 87)

Programmer's On-line Companion puts an abridged version of Inside Macintosh in your system for reference. Simply read the text or transfer some or all of it directly into your normal editing window. Non-Mac–ish interface makes the program confusing, somewhat difficult to use. $34.95. Addison-Wesley, Route 128, Reading, MA 01867. NCP (Jul 87)

Quick & Dirty Utilities, Volume One is a disk full of handy programs. Several desk accessories include a menu bar clock and a terminal emulator. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Nov 85) ★'85 Eddy

QuicKeys lets you make full use of your keyboard. Assign any command (menu choices, DAs, etc.) or series of text blocks and/or command to any key or key combination. Enormously powerful; necessary for Apple Extended Keyboard owners. Requires 512K+. $99.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Jan 88) ★'87 Eddy

RamSnap is a RAMdisk and disk cache in one easy-to-use package. Can store multiple configurations as files. Good product but a little pricey. $59.95. Dove Computer Corp., 1200 North 23rd St., Wilmington, NC 28405. NCP (Jun 87)

Read-It! v. 1.0 is the best consumer value in optical character recognition software. Works with any scanner that saves images as a bit map, PICT or TIFF file. Comes with type tables that can be customized. Version 1.1, $395; ThunderScan version, $149.95. Olduvai Software, 7520 Red Rd., South Miami, FL 33143. NCP (Apr 88)

Sentinel encrypts data files (or sets of files) using a super-secure DES or a super-fast SuperCrypt algorithm. Provides high-level security if you can keep your passwords secret. Requires 1M+. $149.95. SuperMac, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (Apr 88)

SmartScrap and The Clipper are two useful desk accessory utilities for graphics work. SmartScrap is a major enhancement to the standard Scrapbook DA. The Clipper provides you with a transparent Clipboard window, allowing you to resize or crop a graphic to the area that it will be pasted to. $59.95. Solutions International, PO Box 989, Montpelier, VT 05602. NCP (Jul 87) ★'87 Eddy

SoundWave is a useful sound recording and editing utility. Works with waveforms; able to change sampling rates. Previously known as SoundCap. $199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Apr 88)

Stepping Out is a software virtual screen extender. Lets you create a screen as large as memory allows. 9-inch screen is a "view" to larger screen. Also has reduction features. Amazing. $95. Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709. NCP (Mar 88)

Suitcase is a transparent program that automatically lets you use all your fonts and DAs. Foolproof and indispensible. Comes with Pyro!, the best screen saver. Requires 512K+. $59.95. Fifth Generation, 1322 Bell Avenue, Tustin, CA 92680. NCP (Nov 87) ★'87 Eddy

SuperLaserSpool is a LaserWriter spooler. Very fast because it does conversion to PostScript in the background, but doesn't print a faithful rendition of PageMaker documents as a result. $149.95 single user, $395.95 for up to five users on one network. SuperMac Software, 950 N. Rengstorff Ave., Mountain View, CA 94043. NCP (Jun 87)

Switcher is Andy Hertzfeld's contribution to Mac productivity. This program lets users run several programs at once (up to eight on a 1-megabyte or larger machine). Switching between the programs is nearly instantaneous. Requires 512K+. $19.95 from Apple, free from BBSs, included with some third-party applications. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Jun 86)

Symantec Utilities for Macintosh (or SUM) reduces worries about losing data. It prevents, diagnoses, and if required, fixes many serious disk and file problems. Recovers lost files on crashed hard disks. Version 1.0. Requires 512KE. $99.95. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Sept 88)

Tempo is a desk accessory that allows most Mac commands to be intelligently recorded and played back. Capabilities include pausing, conditional branching, and macros that work between applications. $99. Affinity Micro Systems, 1050 Walnut St., Boulder, CO 80302. NCP (Jul 86)

TMON is the debugger for the Mac. This isn't open to question. TMON is simply the best. Comes with the latest version of Darin Adler's Extended User Area. $149. ICOM Simulations, 626 Wheeling Rd., Wheeling, IL 60090. NCP

Turbo Download is a desk accessory designed specifically to increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50% to over 300% at 2400 baud. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

Twelve-C Financial Desk Accessory brings all the power and functionality of a Hewlett-Packard 12C programmable calculator to your desktop. Can be programmed and all registers can be viewed while calculator is running. $49.95. Positive Works, 142 Cone Road, Ormond Beach, FL 32074. NCP

TypeNow is a desk accessory that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jan 86)

WorksPlus Command lets you build and define macros for all Works modules. Predefined macros provide for an even tighter integration of program's word-processing, spreadsheet, and database modules. Requires 1M+. $99.95. Lundeen & Associates, PO Box 30038, Oakland, CA 940604. NCP (May 88)

LANGUAGES

AAIS Prolog is a fast standard Prolog with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. $150. Advanced AI Systems, PO Box 39-0360, Mountain View, CA 94039-0360. NCP (Mar 87)

Aztec C is a C language that will appeal to users with a UNIX background. It uses many UNIX conventions and in the more expensive versions comes with standard UNIX utilities, including the VI editor. $75 beginners, $199 basic system, $299 development system, $499 commercial system. Manx Software Systems, PO Box 55, Shrewsbury, NJ 07701. NCP (May 86)

Basic Compiler is the long-awaited compiler for Microsoft BASIC. The interface is unfriendly, but it gets the job done. Compiled programs run faster, but you can still tell they are written in BASIC. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (May 87)

ExperCommon Lisp is a LISP development system. Not fully Common LISP compatible, but creates good compiled code and standalone applications. Requires 1M+. $995. ExperTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. NCP (Aug 87)

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MINIFINDERS



ExperLISP is a useful programming language for high-level programmers. The more you use it, the more you'll figure out about it. $495. Requires 512K+. ExperTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. CP
★★★

ExperLogo is a version of the popular teaching language, Logo. Features three-dimensional graphics using "bunnies" rather than the usual "turtles." Very speedy, smooth program. Comes with an excellent manual. $149.95. ExperTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. CP
★★★

ExperProlog II is a Prolog based on the new Prolog II standard. Has the ability to handle infinite trees and allows user-defined functions that operate conditionally. Documentation is not the best and Mac interface is nonstandard. $495. ExperTelligence, 559 San Ysidro Blvd., Santa Barbara, CA 93108. NCP (Mar 87)
★★★

Lightspeed C provides an integrated environment for developing desk accessories, applications, and code resources in C. The editor works with the compiler for searches and file management. Can get awkward if you need something outside the environment. $175. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (Apr 87)
★★★★½

Lightspeed Pascal is a fast, powerful development system for Pascal programming. Fully integrated Mac-like environment. Requires 512K+. $125. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (Feb 87)
★★★★★

LPA MacProlog v. 2.0 is a much improved program that includes incremental and optimizing compilers, a graphics environment package, and C and Pascal submodules. Requires 1M+. $495. Programming Logic Systems, 31 Crescent Dr., Milford, CT 06460. NCP (Feb 88)
★★★★

MacAsm is a software development system that allows programs to be written in assembly language. Programmers can assemble, edit, and test software, and an integrated resource compiler lets independent applications run from their own icons. $125. Mainstay, 5311-B Derry Rd., Agoura Hills, CA 91301. NCP
★★★

Mac C is a good, highly Mac-oriented implementation of this popular development language. Assembler and linker included. $425. Consulair, 140 Campo Dr., Portola Valley, CA 94025. NCP ★'85 Eddy
★★★★

MacExpress is a development environment or shell. Programmers use it to save time and effort when developing standalone applications for the Mac. $195. ALSoft, PO Box 927, Spring, TX 77383. NCP (Feb 86)
★★★

MacForth Plus is an excellent implementation of the popular Forth programming language. New, reduced price, $199. Creative Solutions, 4701 Randolph Rd., Rockville, MD 20852. NCP
★★★★

Mach II is a multitasking implementation of Forth that allows local variables and text files. Can create standalone applications. Several windows can be up with different operations in each, operating concurrently. Execution is fast. $99.95. Requires 512K+. Palo Alto Shipping, PO Box 7430, Menlo Park, CA 94026. NCP (Apr 86)
★★★★

Macintosh 68000 Development System is a fairly traditional assembly language package. The two-disk set provides an editor (Edit), an assembler, a linker, an executive, and a resource compiler. $195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP
★★★★

MacIntosh Pascal is Apple Computer's version of this very popular programming language. Loaded as it is with innovative teaching features, this interpreter is an excellent introduction to Pascal. $125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. CP
★★★

MacScheme is a LISP dialect with "artificial intelligence" capabilities. Has a large appetite for RAM. Interpreted language with Toolbox access limited to a small part of QuickDraw. $125. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (Jun 86)
★★★

MacScheme+Toolsmith is a Mac version of Scheme, a LISP dialect. Beautiful implementation, marred only by relative slowness compared to similar products. Get Toolsmith. Requires 1M+. $395. Semantic Microsystems, 4470 S. W. Hall, Beaverton, OR 97005. NCP (Aug 87)
★★★★★

Megamax C is an easy-to-use, full version of C. Has a compiler, linker, disassembler, editor, and much more. Good for beginners. Excellent documentation. $299.95. Megamax, PO Box 851521, Richardson, TX 75085. NCP
★★★★

Microsoft BASIC was the Mac's first programming language. This interpreter (it's not a compiler) now supports the Toolbox and the whole Mac interface can be implemented in your programs. For nonprogrammers there are lots of programs available. $99. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP ★'85 Eddy
★★★★

MIDIBasic is a library of simple, but highly useful routines for writing MIDI software. Good stuff. Sketchy documentation. Works with both Microsoft and ZBasic. Requires 512K+ plus BASIC. $49.95. Altech Systems, 831 Kings Highway, Shreveport, LA 71119. NCP (Aug 87)
★★★★

Object Logo is an object-oriented programming language with access to the Toolbox. Good product, but can't produce standalone applications. Requires 512K+. $79.95. Coral Software, PO Box 307, Cambridge, MA 02142. NCP (Aug 87)
★★★★

Personal Prolog is an inexpensive and well-documented program. Has no debugging or search and replace facilities, making it a more appropriate tool for learning than development. Documentation and use of Mac interface are excellent. $64.95. Optimized Systems Software, 1221 B Kentwood Ave., San Jose, CA 95129. NCP (Mar 87)
★★★★

Prolog/m is a solid Prolog following the Edinburgh standard. Has extensive debugging facilities, but you'll need separate Toolbox disk with 58 additional predicates. Drawback: no true editing or printing facilities. $99.95. Chalcedony Software, 5580 La Jolla Blvd., La Jolla, CA 92037. NCP (Mar 87)
★★★★

QUED (Quality Editor for Developers) is the ultimate source code editor. Loaded with useful and well thought out features, it will make any programmer's life much easier. It is not a word processor, however. $65. Paragon Concepts, 4954 Sun Valley Rd., Del Mar, CA 92014. NCP (Mar 86)
★★★★

TML Data Base Toolkit is an ISAM type database that provides fast and efficient administration of large data files in applications developed with *TML* compiler. Supports multiple open index files. $89.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Dec 86)
★★★★

TML (MacLanguage Series) Pascal is a good Pascal compiler, capable of producing standalone programs. Can use most existing Lisa Pascal programs with only slight modification. Requires 512K+. $99.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Jun 86) ★'86 Eddy
★★★★★

TML Source Code Library shows how to write programs that use custom definition routines, speech, serial drivers, split bars, and other topics. Provided on three 400K diskettes. Requires TML Pascal. $79.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Dec 86)
★★★★½

Visual Interactive Programming is a unique visual programming system for creating simple Macintosh applications. Programs are constructed in a flowchart-type manner. Easy access to most toolbox routines. Poor printing control. $124.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 87)
★★★★

ZBasic is a fast, interactive compiler capable of creating standalone applications that take advantage of Mac's unique features and abilities. Includes Edit, RMaker and MacInTalk. Requires 512K+. $89.95. Zedcor, 4500 E. Speedway Blvd., Tucson, AZ 85712. NCP (Dec 86)
★★★★

MINIFINDERS



EDUCATION

Alphabet Blocks teaches prereaders the letters and sounds of the alphabet. The digitized voice of an on-screen elf is clear and pleasant. Very intuitive. Requires 1M+. $49.95. Bright Star Technology, 14450 N.E. 29th Place, Bellevue, WA 98007. NCP (May 88)

American Discovery is an interactive United States geography game that teaches states, capitals, and, in a roundabout manner, postal codes. Suffers from small maps. Requires 512K+. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (May 88)

Business Simulator is a training tool in a simulation game. Make decisions that manage the company through several stages over 25 years. Decisions become more difficult over time. Requires 1M+, 2 disk drives (one must be 800K). May be run from a hard disk. $69.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Dec 87)

ChipWits is a combination game and teaching tool. Players create programs to maneuver robots through a set of 8 mazes. The programs are written in ChipWit's built-in icon-based programming language (IBOL). $49.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP ★'85 Eddy

Course Builder v. 2.0 creates standalone educational applications. An easy-to-learn dedicated programming language uses blocks and arrows. Graphics, animation and sound can be integrated. Version 2 allows mathematical calculations. Poor documentation. $395, plus $10 shipping. TeleRobotics International, 8410 Oak Ridge Highway, Knoxville, TN 37931. NCP (Oct 87)

KidsTime is a package of five quality educational programs for children between the ages of 3 and 12. The programs all have adjustable difficulty levels. Some use speech and one is a nice introduction to musical notes. Sparse documentation. $49.95. Great Wave, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Oct 86) ★'86 Eddy

LearnWord 3.0 is a three-part series of cassette tape/diskette modules that explain the intricacies of Word 3.0. They do the job, but remind you why cutting classes was more fun. $49.95 per module. Personal Training Systems, PO Box 54240, San Jose, CA 95154. (Apr 88)

LXR•Test generates tests from a database of questions. Makes it easy to modify and scramble test questions. Flexible output. Requires Mac 512E+, two 800K drives, or a hard-disk drive. $199 or $399, depending on features. Logic eXtension Resources, 9651 Business Center Dr., Rancho Cucamonga, CA 91730. NCP (May 88)

MacEdge and **MacEdge II** each contain 8 reading or math drill programs for basic skills. Programs follow one of three formats, a bit contrived. Contrivances are design flaws. $49.95 each. Think Educational Software, 16 Market St., Potsdam, NY 13676. CP

MacType offers structured typing instruction. Can teach both standard and Dvorak keyboards. Features include certificates for reaching certain levels. Can be used in a multistudent environment. $49.95. Palantir Software, 12777 Jones Rd., Houston, TX 77070. CP

MasterType is proof that learning to type can be fun. In this arcade-style action game words descend from four corners towards the center ship; the user must type them correctly. Features 18 skill levels, tracks errors, recommends lessons and provides comparison scores. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP

On Becoming a Desktop Publisher is a video training tape based largely on the syndicated television program, "The Computer show." Good primer on the fundamentals of DTP products. Will eventually become dated. Requires Beta or VHS VCR. $49.95. Ocean Communications, 1641 North First St., Suite 160, San Jose, CA 95112. (Sep 88)

Practica Musica uses an interactive game and practice approach to teach music theory and ear training. Excellent training tool for the serious music student, it is also fun for anyone who wants to develop a trained ear for intervals, chords, and melodies. Requires 512K+. $125. ARS Nova Software, P.O. Box 40629, Santa Barbara, CA 93140. NCP (Nov 87) ★'87 Eddy

Reader Rabbit teaches 4-to-8-year olds how to read in four elegant games that play and build off of each other. Requires 512KE+ and an 800K drive. Mac II and MultiFinder hostile. Version 2.0 reviewed. $59.95. The Learning Company, 6493 Kaiser Dr., Fremont, CA 94555. CP (Jun 88)

Sensei Physics is a capable, intelligent, well-designed study aid. Covers Vectors to Thermodynamics to The Nature of Light. Animated experiments let you try out concepts. Requires 512K+. $99.95. Broderbund Software, 17 Paul Dr., San Rafael, CA 94903. CP (Jan 88)

Subli-Mac is a self-hypnosis program, combining subliminal, relaxation, and positive-self-image techniques. Flashes a brief user-written message (against a diversionary pattern) at your subconscious. Dangerous near hard disks. Manual suffers from terminal California-ese. $39.95. Psy-Den, PO Box 248, Champlain, NY 12919. NCP (Jan 88)

ENTERTAINMENT

A Mind Forever Voyaging is a departure in text adventure games. It has a more extensive vocabulary and a more involved story than most of the genre. The story here is gripping, but there are only a few puzzles to solve. Requires 512K+. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Apr 86)

Alter Ego simulates the entire lifetime of a fictional character. The player's reaction to each multiple-choice event shapes the character's future relationships, job, health, etc. Spectacular the first time you play; after that there are too many similarities to previous characters. $59.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (Jun 86)

The Ancient Art of War gives users a chance to refight some famous campaigns on both strategic and tactical levels. Campaigns can also be designed from scratch. Very playable, addicting game. Requires 512K+ Mac. $44.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Apr 86)

Apache Strike would have been an excellent arcade game in the late '70s. Now, it's passe. Navigate a helicopter to destroy ever-increasing numbers of enemy aircraft and tanks. Mac II hostile. Requires 512K+. $49.95. Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. NCP (Jul 88)

Archon pits the forces of Light against Dark in a quest to gain control of five Power Points on a checkerboard grid. The shifting cycles of squares' colors keep the balance of power ever-changing. One or two players. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Oct 86)

Balance of Power is the world's first computer peacegame. This simulation allows players to become either the President of the United States or General Secretary of the Soviet Union. Extraordinary artificial intelligence routines and general play make this a classic. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60022. CP (Prem)

Battle Stations is a deceptively simple game based on the pen and paper game of Battleship. Requires strategy on several levels. Makes excellent use of Mac sound and graphics. Fun, casual game, especially when the Mac is one of the players. Requires 512K+. $30. Timeline, PO Box 60, Ypsilanti, MI 48197. NCP (Jun 87)

MINIFINDERS



Beyond Dark Castle brings back Prince Duncan in an encore per-
★★★½ formance to run, jump, and beat his way to victory. But really, just more of the same. Requires 512KE. $49.95, Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. NCP (Aug 88)

Beyond Zork is yet another installment in the famous Zork series of
★★★★½ text adventures. Find the fabled Coconut of Quendor to restore failing magic in this expert-level game. On-screen mapping and the Mac's window environment are utilized. $49.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Apr 88)

Borrowed Time casts players as detectives who have to solve their
★★★★ own murder — before it happens. This game requires players to think and act like a detective to solve the game. Good sentence parser, sketchy Mac interface. $44.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (May 86)

Bridge 4.0 provides three other players and the cards for a game of
★½ rubber bridge. It's an average (Goren) bidder and a less than good card player. Good if it's the only game in town. Plays slowly since it's written in BASIC. $29.95. Artworx Software, 150 N. Main St., Fairport, NY 14450. CP (Sep 86)

Bureaucracy is a paranoiac text adventure that dares you to
★★★½ move to a new house and job and still maintain some degree of sanity, not to mention a low blood pressure. Written by Douglas Adams of Hitchhiker's fame. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Aug 87)

The Chessmaster 2000 is a masterful chess program that will
★★★★★ appeal to both novice and master. You can view the board from 2- or 3-D perspective and turn the board for a better look. Play is smooth and easy, and the program responds by voice. You may get tired of hearing "Gotcha," though. $39.95. The Software Toolworks, 13557 Ventura Blvd., Sherman Oaks, CA 91423. CP (Jul 87)

Crystal Quest combines all the good elements of nearly every video
★★★★½ game ever made. Move a piece around to gobble up points and crystals. Shoot the nasties and get through the goal before they get you. Excellent sound effects. In color on the Mac II. Requires 512K+. Greene, 15 Via Chualar, Monterey, CA 93940. CP (Apr 88)

Dark Castle is an outstanding achievement in action games which
★★★★★ integrates RealSound with superb animation and graphics. You'll need better-than-average hand/eye coordination, but it's well worth the effort. Requires 512K+. $39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Apr 87) ★'87 Eddy

Deja Vu: A Nightmare Comes True is a graphic adventure that
★★★★★ breaks new ground. Innovative use of the Mac interface in truly playable and exciting game. A great introduction to graphic adventure games. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Jan 86) ★'85 Eddy

Dinner at Eight is a useful recipe filing system that includes a
★★★★ collection of recipes from a nationwide sampling of restaurants. Users enter number of diners and program scales recipes. $49.95. Rubicon, 2111 Dickson Dr., Austin, TX 78704. NCP (Jan 86)

Down Hill Racer is an action game with three skier personalities,
★★★★ four courses and four skill levels. There's something here for every player, no matter how bad or good. Full digitized sound (very nice!) $49.95. Miles Computing, 7741 Alabama Ave., Canoga Park, CA 91304. CP (Sep 87)

Enchanted Scepters is a surround-sound graphic adventure game.
★★★★ It has a limited vocabulary and virtually no story. Offers extensive and varied scenes and utilizes the Mac interface to the fullest. $39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. CP (May 86)

Falcon simulates an F-16 fighter jet with gut-tightening, sweat-
★★★★½ making realism. Go against MiGs and dodge SAMs scenarios. Requires 1M+. $49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. NCP (May 88)

Ferrari Grand Prix is an exciting race car simulation game. Master-
★★★★ ing it takes quite a bit of time and effort. Startup course and four other courses are built into the program. You can also design your own courses and backgrounds. Requires 512K+. $59.95. Bullseye Software, PO Drawer 7900, Incline Village, NV 89450. CP (Jul 87)

Flight Simulator puts you at the controls of a small plane (prop or
★★★★ jet) and lets you roam North America. As difficult as real flying. Mac version has features not found on earlier versions, including spotter aircraft. Not all features available on 128K. $49.95. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP (Nov 86)

Fokker Triplane is about as near to flying as you can get seated in
★★★★ front of a computer. Very realistic simulation and excellent graphics. Well-designed and implemented. $59.95. Bullseye Software, PO Drawer 7900, Incline Village, NV 89450. CP (Feb 86)

Fool's Errand is an outstanding collection of 80 puzzles woven around
★★★★★ a mythical theme of an evil priestess and the search for wisdom. Requires 512K+. $49.95. Miles Computing, 7741 Alabama Avenue, Canoga Park, CA 91304.MCP (Jul 88)

Gato puts players in command of an American submarine in World
★★★★½ War II. This superb simulation game uses all of the Mac's graphic capabilities to really make you feel that "you are there." $49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. CP (Nov 85)

GO is the Chinese equivalent of chess. Players plonk markers on a
★★★½ grid to gain territory and outwit an opponent or the computer. Requires 512K+. Mac II hostile; MultiFinder friendly. Version 1.0 reviewed. $49.95. Infinity Software, 1144 65th St., Studio C, Emeryville, CA 94608. NCP (Jun 88)

Grand Slam is an absorbing and realistic tennis simulation game.
★★★★ Practice or play tournament against Mac-controlled players with different styles and abilities on four different surfaces. 512K or Mac Plus. $49.95. Infinity Software, 1331 61st St., Emeryville, CA 94608. CP (Nov 86)

Handwriting Analyst produces a personality profile based on an-
★★★★½ swers to questions about one's handwriting. It's simple and the results will amaze and astound. $49.95. Ciasa, 2017 Cedar St., Berkeley, CA 94709. NCP (Apr 88)

HardBall is a baseball simulation game complete with umpire's
★★★★ calls and crowd sounds. Great graphics and a lot of fun for fans. $44.95. Accolade, 5500 S. Winchester Boulevard, San Jose, CA 95128. CP (Feb 87)

Hollywood Hijinx substitutes a modern Hollywood estate for the
★★★★ famous Underground Empire, but otherwise represents a return to Zork gameplay and feel. There's even a maze to navigate. Simplistic, but good. $39.95. Infocom, 15 CambridgePark Dr., Cambridge, MA 02140. NCP (Jun 87)

Klondike 3.3 is a version of solitaire that uses video game-like
★★★★★ scoring to create a superb, totally addictive game. Simple to play, nearly impossible to stop playing. Shareware: $10. Unison Software, 415 Clyde Ave., Mountain View, CA 94043. NCP (Dec 87)

Leather Goddesses of Phobos is another in the long line of witty
★★★★★ and entertaining Infocom text adventures. This one lets you choose your sex and comes with a 3-D comic and a scratch 'n sniff card. It has three levels of play: tame, suggestive and lewd. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Feb 87)

Lode Runner is a 150-screen action-strategy challenge. Move
★★★★ around a grid of ladders and platforms collecting treasure; dig a hole to trap pursuers. Build your own challenges. $14.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP

MacCourses adds four very challenging new courses to MacGolf.
★★★½ Courses are swapped on the original MacGolf master disk

MINIFINDERS



two at a time. Nice add-on for a good game. Requires MacGolf. $34.95. Practical Computer Applications, 1305 Jefferson Hwy., Champlin, MN 55316. CP (Apr 87)

MacGolf is a dynamic simulation of real golf. Players have a choice ♟♟♟♟½ of courses and difficulty levels. Superb playability makes this a must for all golfers and gamers. Requires 512K+. $59.95. Practical Computer Applications, 1305 Jefferson Hwy., Champlin, MN 55316. CP (May 86)

MacMan is a two-part package. The software portion is a decent ♟♟♟♟♟ PacMan-like game. The hardware part is a tiny converter that lets you use a joystick with a Mac or Mac Plus. $39.95. Nuvo Systems, 225 Tank Farm Rd., San Luis Obispo, CA 93401. CP (Aug 87)

Mac Pro Football is a terrific sports simulation that gives you the ♟♟♟♟ chance to pit any combination of 38 Super Bowl teams against each other and direct team play. It comes with excellent, detailed (and necessary) documentation. Play selection can get a bit Byzantine. $49.95. Avalon Hill, 4517 Harford Rd., Baltimore, MD 21214. CP (Mar 87)

MacRacquetball uses digitized videos and sounds of professional ♟♟♟½ players for a realistic simulation. Has lots of control settings and can be played against someone else over a modem or between hard-wired Macs. Turn off hard disks before playing. $59.95. Practical Computer Applications, 1305 Jefferson Hwy., Champlin, MN 55316. CP (Oct 87)

Maze Survival challenges players to destroy maze walls before roving ♟♟½ bugs squash themselves against it. Bugs lay eggs to spawn a new generation. Repetitive. $34.95. Olduvai Software, 7520A Red Road, South Miami, FL 33143. NCP (Aug 87)

MazeWars+ is an interactive, multiplayer game to be played on ♟♟♟♟ AppleTalk or through a modem link. Chase opponents through a four-level maze. Requires 512K+, AppleTalk or Hayes-compatible modem. $49.95. MacroMind, 1029 W. Wolfam, Chicago, IL 60657. NCP (Nov 86)

MicEdGames is a collection of five educational games, MicAlphabetize, MicTime, MicStates, MicMatch and MicSpell, supposedly for ages five to adult. Games are sometimes cute but generally poorly designed. Manual is poorly written. Some entertainment value. $19.95. MicEdWare, 4265 Midland Rd., Saginaw, MI 48603. NCP (Dec 87)

Mind Over Mac features five games. Entertainment for the whole ♟♟♟♟ family. Good graphics paired with synthesized sound and on-screen help. $49.95. Think Educational Software, 16 Market St., Potsdam, NY 13676. CP (Feb 86)

MoonMist is an introductory level text adventure game. This is a ♟♟♟ typical haunted English castle story, not quite up to Infocom's best. It has four versions, so it's good for more than one play. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (May 87)

MSFL: Pro League Football is a professional football league simu- ♟♟♟♟½ lation that encourages people to play people, not the machine. Fast with lots of stats. Quirky MS-BASIC behavior. Spotty manual. No LaserWriter support. Requires 1M+. $49. MicroSports, PO Box 15799, Chattanooga, TN 37415. NCP (Apr 88)

NewGammon is animated backgammon that will challenge even ♟♟♟♟ good players. Features include variable skill levels and strategies and options to play the Mac or watch the Mac play itself. An arcade-like high speed mode is included. $39.95. Newsoft, PO Box 3046, Newport Beach, CA 92663. CP

NFL Challenge simulates coaching and watching professional foot- ♟♟♟½ ball. Comes on two disks, one with program and System, the other statistical data. Play against either human or computer coaching. Plays are selected from pre-defined playbooks. $99.95. XOR Corp., 5421 Opportunity Ct., Minnetonka, MN 55343. NCP (Jun 87)

Ogre is a strategy tank game played on a hexagon grid. The ogre ♟♟♟♟ is an intelligent cybertank out to smash your command post. Customize your defense. Exceptionally good Mac interface. Has two-player option. $30. Origin Systems, 136 Harvey Rd., Building B, Londonderry, NH 03053. CP (Nov 87)

Orbiter puts a real space shuttle on the Mac screen. A multitude of ♟♟♟♟½ controls, intelligent on-board computer with speech capabilities, real-time graphics, and 16 distinct missions help this program succeed as both a game and a simulation. $49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. NCP (Jul 86)

Orbquest is a fantasy role-playing adventure with better-than-aver- ♟♟♟½ age puzzles and an excellent sense of humor. Not as sophisticated as some, but a good value. $49.95. QWare, PO Box 850415, Richardson, TX 75085. CP (Dec 86)

Patton vs. Rommel is a traditional-style strategic war game. It ♟♟♟♟ covers events in Normandy in 1944. While complex, it's well-designed and very playable. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Apr 87)

The Pawn is an unusual British interactive adventure game with text ♟♟♟½ and graphics. The unique interface has some drawbacks, but The Pawn has humor, social satire, is entertaining, and is challenging. $44.95. Requires 1M+. Firebird, PO Box 49, Ramsey, NJ 07446. CP (Mar 87)

Pinball Construction Set lets users create their own pinball ♟♟♟♟ games, as elaborate or as easy as desired. Uses MacPaint for backgrounds and has lifelike sounds (on 512K+ Macs). $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Jan 86)

Plundered Hearts brings gothic romance to interactive fiction in the ♟♟♟½ familiar Infocom mode of puzzles, mazes, and riddles. You play a 17th-century heroine dodging pirates to rescue her wrongly imprisoned father. Medium difficulty. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. CP (Jan 88)

Portal is an intriguing science fiction novel for kids that suffers from ♟♟♟ having a poor interface. Storyline: All of humanity is missing and you have to search through a database for files that reveal the mystery. Nothing in the way of role-playing, and the Mac version is slow and buggy. $49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (Oct 87)

PT-109 by any other name is Gato, a WWII submarine simulator ♟ also put out by Spectrum. Three year old technology with a minor face lift. Version 1.0. Requires 512K. Mac II friendly; MultiFindr hostile. $49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. NCP (Sep 88)

Puppy Love is a combined game and teaching tool. As you teach ♟♟♟♟½ your puppy tricks and routines, you learn the basics of programming logic. Great fun for all ages. Does not run from a hard disk. $29.95. Addison-Wesley, Route 128, Reading, MA 01867. CP (Mar 87)

Quarterstaff v. 1.2 is a fantasy adventure game of the typical ♟♟♟♟ "good vs. evil" variety. Ability to use characters in other adventures gives this game a lot of potential for development. Requires 1M+. $49.95. Simulated Environment Systems, 800 South Pacific Coast Hwy., Redondo Beach, CA 90277. NCP (Mar 88)

Seven Cities of Gold is an educational program masquerading as ♟♟♟♟ an adventure game and is practically unique in being equally good in both respects. You are to land (not the easiest part) in the New World and attempt to placate the natives, seed a few missions and collect gold. Nice work if you can get it. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Jun 87)

Shadowgate is an icon-based graphic adventure. You, as the seed ♟♟♟♟½ of prophecy, must save the world from the evil warlock. Far surpasses all others with great animated graphics, sound, and adventure. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Dec 87)

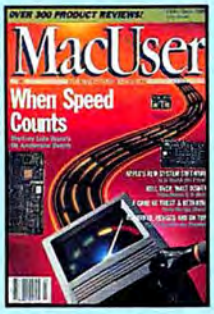
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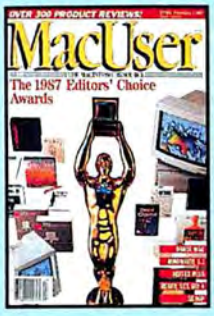
COMPLETE YOUR LIBRARY OF MACINTOSH REFERENCE INFORMATION WITH BACK ISSUES OF MACUSER MAGAZINE.



April '88—Highlights of San Francisco Mac Expo '88; Double Helix II review/tutorial; 4th Dimension power guide; MacTex and Textures desktop publishing software compared; top-quality halftones with Thunderscan; OCR for every scanner; Design 2.0: the ultimate organizer?; GCC's Personal Laserprinter; and more.



March '88—When Speed Counts; Focal Point and Business Class the new commercial stacks; Microsoft Word 3.01; QUED/M and Stepping Out programs; Apple's new System software: worth the price?; VideoWorks II; See Mac Read; Trust and Betrayal: how's your aura?; and more.



February '88—The 1987 Editor's Choice Awards; dBase Mac; Mindwrite 1.1 adds more power; Ready, Set, Go! 4 will take over Pagemaker?; Reflex Plus; Scoop; ImageMaker's 35mm slide capabilities; picking a compiler; two modem-sharing solutions; Oriental graphics with MacCalligraphy; and more.



January '88—QuicKeys: using the mouse as an accessory. Plus: Why Canvas wins out over LaserPaint; MacSmarts and Instant Expert compared; Hypertext in 512K; Hypercard programming tutorial; Desktop Express e-mail; Macintosh Programmer's Workshop examined, Part I; making Postscript special effects work; and more.



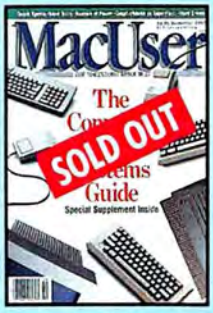
December '87—HyperCard: royal flush or bluff?; Trapeze 2.0; hard disk preventive care and cures; the arrival of Red Ryder 10.0; The Comic Strip Factory; feats of magic with Time Wand; Master Tracks Pro: the best Mac MIDI sequencer?; a guide to Castle Shadowgate game; report from the Seybold Desktop Publishing Conference; and more.



November '87—4th Dimension: the ultimate data base?; unlimited font and DA access with Suitcase; a roundup of new and updated accounting programs; supercharging your SE; personal organization made simple, with C.A.T.; how to leave notes for yourself, with Comment; professional CAD/CAM on the Mac; and more.



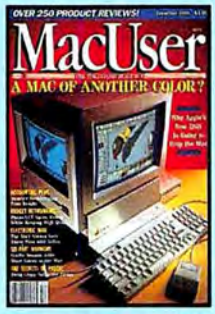
October '87—Laser Wars! Postscript printer free-for-all; Course Builder educational program developer; utilizing the full power of Excel; PageMaker 2.0; still the standard?; JustText Postscript desktop publishing program; Fontographer; GraphicWorks 1.1; Jam Factory and M music programs; and more.



September '87—Special Supplement: "The Complete MacUser Systems Guide" includes guide to configurations, systems guide directory, and more. Plus: Xpress; Doug Clapp's Word Tools; Douglas Adams on Word 3.0; GraphicWorks 1.1 and SuperPaint compared; recycling ImageWriter ribbons; and more.



March '87—Special section on new word processors reviews Laser Author, MindWrite, Word Handler, Word 3.0 and WriteNow; MacinTax tax preparation software; 5 time-saving printer buffers compared; 5 AI languages reviewed; Mac Pro Football; FREE program in Softstrip format; and more.



December '86—Why Apple's new IIGS is going to help the Macintosh; Accounting Plus; PhoneNET saves money without sacrificing quality; inBOX E-mail system; Studio Session adds more voices to the Mac; Doug Clapp on the secrets of Pascal; StatView 512+; Compiled ZBASIC; FREE programs in Softstrip format; and more.

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MINIFINDERS



Shanghai challenges players to clear a board of all 144 tiles by
♦♦♦♦♦ matching pairs of mah-jongg tiles and removing them. Terrific strategic options plus the ability to randomly generate new game boards keep this one fresh. $44.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (Nov 86) ★'86 Eddy

Skyfox is a sophisticated 3-D shoot-em-up. You're fighting tanks,
♦♦♦ planes and enemy cities floating in the sky. Fast graphics, good sound, slick, on-board attack computer and many levels of difficulty will keep fans of this genre happy for hours. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Oct 86)

Smash Hit Racquetball is an accurate and entertaining simulation
♦♦♦♦½ of a day on the courts. Digitized sound adds to the realism. Includes a hard-disk install, unusual for a game. The low price makes this the perfect Mac gift. $19.95. Primera Software, 650 Cragmont Ave., Berkeley, CA 94707. CP (Dec 86)

Snake-Bar lets you guide a snake (or train or semi) through a maze,
♦♦♦♦ picking up objects that feed and make your snake grow. Options include changing languages, editing the maze, and an X-rated game. $15. (shareware). Georges Malmound, 37 Bis rue des Abbesses, Montmartre, 75018 Paris, France. NCP (Dec 87)

Solitaire Royale is a collection of eight solitaire card games. The
♦♦♦♦ Tour mode cycles through each game. Tournament deals the same hand for several players. $34.95. Published by Spectrum Holobyte, 2061 Challenger Dr., Alameda CA 94501. CP (May 88)

Space Quest is a three-dimensional, animated adventure in which
♦♦♦♦ you play a janitor in a dicey situation. All you have to do is get off your ship before it explodes and save the Earnon System. Runs on any Mac. $49.95. Sierra On-Line, PO Box 485, Coarsegold, CA 93614. CP (Sep 87)

Star Fleet I: The War Begins! is a space opera of the Star Trek
♦♦♦♦ variety. Rise through the ranks from ensign to admiral in this serialized adventure. Requires 512K+. $55. Interstel, PO Box 57825, Webster, TX 77598. NCP (May 88)

Stationfall is the sequel (finally) to Infocom's excellent Planetfall
♦♦♦♦½ text adventure. Reunited with Floyd and sent to pick up requisition forms, you must solve the empty space station problem. As straightforward as other Infocom games; more so than some. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Nov 87)

Strategic Conquest Plus challenges you to discover an unex-
♦♦♦♦½ plored world and conquer it by manufacturing and deploying armies, ships, and planes. A two-disk game that doesn't support an external drive. Requires 512K+. $59.95. PBI Software, 1111 Triton Dr., Foster City, CA 94404. CP (Feb 88)

Sub Battle Simulator is a superior naval combat game. Sixty differ-
♦♦♦♦ ent missions and the ability to link missions keep it from ever getting boring. Requires 512K+. $39.95. Epyx, PO Box 8020, Redwood City, CA 94063. NCP (Aug 87)

Tass Times in Tone Town is a slightly off-the-wall graphic adven-
♦♦♦½ ture in which you need a flashy hairdo and a jumpsuit before you can get anywhere, and you pay for things with guitar picks. Decent puzzles, with a sense of humor. $4.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (Jan 87)

The Toy Shop is a construction kit for building 20 different working
♦♦♦♦ model toys. Some parts can be customized. Manual gives clear instructions, but many toys are too complex for a child. $49.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Nov 86)

Trust & Betrayal: The Legacy of Siboot requires negotiating with
♦♦♦♦½ six artificial personalities in a struggle for power — not surprising considering that it comes from the maker of Balance of Power. Uses hieroglyphics to communicate in a fantasy world. Requires 512K+. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Mar 88)

Ultima III allows up to four characters to cooperate to explore the
♦♦♦♦½ vast wilderness of Sosaria. $59.95. Origin Systems, 340 Harvey Rd., Manchester, NH 03103. CP

Uninvited is an icon-based adventure game set in an extremely
♦♦♦♦♦ haunted mansion. Since you access the parser by double-clicking, command choices are always visible — you don't waste time trying to figure out which words the program understands. It has animation and sound. $49.95. Mindscape, 3444 Dundee, Northbrook, IL 60062. CP (Sep 86) ★'86 Eddy

Winter Games lets up to eight players compete against each other
♦♦♦♦ in Olympic events including figure skating, bob sledding, biathlon, and ski-jumping. Excellent animation, good graphics, good theme music. $39.95. Epyx, 600 Galveston Dr., PO Box 8020, Redwood City, CA 94063. CP (Mar 86)

Wizardry is an outstanding dungeon exploration adventure pit-
♦♦♦♦♦ ting a party of up to six characters against the guardian monsters of the evil wizard Werdna. Capture his amulet to earn your reward. Even after solving the game, you'll want to go back into the dungeon. $59.95. Sir-Tech, Charlestown-Ogdensburg Mall, PO Box 245, Ogdensburg, NY 13669. CP

WordPlay is a word game with over 50 crossword puzzles for differ-
♦♦♦♦ ent levels of expertise. User friendly, it offers on-screen Help menus. A Work mode allows development of new puzzles for the creative. $49.95. Palantir, 12777 Jones Rd., Houston, TX 77070. NCP (Mar 86)

World Builder is an adventure game construction set with what
♦♦♦♦½ amounts to its own programming language. The whole program (language included) is easy to learn and produces commercial quality games. No support for the programming language, though. $79.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Apr 87)

Xyphus is a role-playing game pitting four characters (fighters or
♦♦♦♦ wizards) against multiple scenarios that grow increasingly harder. Excellent Mac interface and icon control. $39.95. Penguin, PO Box 311, Geneva, IL 60134. CP

Your Personal Poet creates personalized greeting cards on the
♦♦♦½ Mac. Comes complete with four greeting cards and matching envelopes. Requires 512K+. $29.95. Computer Poet, 775 E. Greg St., Sparks, NV 89431. NCP (Jun 87)

Zork II is where the adventure continues in the underground em-
♦♦♦♦½ pire. A wandering wizard keeps things interesting, though there's a way to beat him if you persevere. $44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP

Zork III is the final chapter in the trilogy. Players come up against the
♦♦♦ ultimate enemy — the Dungeonmaster himself. More closed-ended than previous Zorks. $44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP

MUSIC

Apple MIDI Interface is a simple Musical Instrument Digital Inter-
♦♦♦ face with a 1 MHZ clock rate. Has only one MIDI input and one output. Works with all Macs; adaptor required for 128K and 512K. $99. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Jun 88)

ConcertWare+ is an enhanced version of ConcertWare. Has differ-
♦♦♦♦ ent instruments and can use any four of a set of eight at any point in a piece. Supports Adobe Sonata music font. $69.95. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 87) ★'85 Eddy

ConcertWare+MIDI is a composition and transcription program
♦♦♦♦ that can record multiple notes from a MIDI keyboard. Easy to use if you read music. Handles eight tracks of eight voices each. Requires 512K. Version 4.0. $149.95. Great Wave

MINIFINDERS



Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 87)

Deluxe Music Construction Set lets you enter up to 48 voices on eight staves, and play the music through the Mac's internal speaker and/or via MIDI. Requires 512K+. Mac II and MultiFinder hostile. Version 2.0 reviewed. $99.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Jun 88)

Jam Factory is a program for performing complex manipulations on MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K+, MIDI interface, and MIDI synthesizer. $189. Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. CP (Oct 87)

Jam Session is a music program for those who think MIDI refers to the length of skirts. Without any skill, you can "Jam" with rock, jazz, rap, or country tunes. A sort of "Sing Along With Mitch" for the computer set. Requires 512K+. $49.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903. CP (Jul 88)

Listen is an educational tool for ear training. It has both a piano keyboard and a guitar fretboard for the student to input notes, and offers a wide range of exercises. $99. Resonate, PO Box 996, Menlo Park, CA 94026. (Jan 87)

M is a music composition and creation program that works with MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K+, MIDI interface, and MIDI synthesizer. $219. Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. CP (Oct 87)

Master Tracks Pro is a full-featured, second-generation MIDI sequencer that adheres to the Mac interface very well. It's the first program to have graphic-controller editing. Needs patch chasing for professional use, but it's still a rock-solid program. $350. Passport Designs, 625 Miramontes St., #103, Half Moon Bay, CA 94019. CP (Dec 87)

MIDIBasic is a simple, but highly useful routine for writing MIDI software. Good stuff. Sketchy documentation. Works with both Microsoft and ZBasic. Requires 512K+ plus Basic. $49.95. Altech Systems, 831 Kings Hwy, Shreveport, LA 71119. NCP (Aug 87)

Music Mouse is a music program in a genre all its own. Called an "intelligent instrument," Music Mouse gives you instant musical feedback as you move the mouse and type on the keyboard, which controls tempo, vibrato, volume, etc. $59.95. OpCode Systems, 444 Ramona St., Palo Alto, CA 94301. NCP (May 87)

Performer v. 2.2 is the definitive MIDI sequencer, and is priced accordingly. Includes looping, SMPTE synching, 32 simultaneous Ins and Outs, unlimited overdubbing, and compatibility with Professional Composer for transription. Requires MIDI interface and 512K+. $395. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan 88)

Professional Composer produces performance-quality sheet music using Adobe's Sonata font. Scores can be created from scratch or imported from Performer (and can be exported to Performer for MIDI playback). Requires 512K+. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan 88)

Studio Session consists of two programs, an Editor, and a Player, that produce music with six voices of digitized sound. Excellent program plus good manual make this a good buy. $89.95. Bogas Productions, PO Box 6699, Terra Lina, CA 94903-0699. NCP (Aug 87) ★'86 Eddy

UpBeat turns the Macintosh into a front panel for a highly complex and versatile drum machine. Input patterns with mouse, MIDI keyboard, or drum machine. Requires 512K. $150. Intelligent Music, PO Box 8748, Albany, NY 12208. CP (May 88)

HARDWARE & ACCESSORIES

AST TurboScan is a 300 dpi scanner with sophisticated graphics software. Scans at resolutions from 72 to 300 dpi. SuperScan software offers halftone, line art, and mixed modes. "Virtual memory processing" lets you scan images too large to fit in RAM. $1899. Requires 512K+. SuperScan software included. AST Research, 2121 Alton Ave., Irvine, CA 92714. NCP (Nov 87)

Classic Professional Graphics Display is a low-cost color monitor for the Mac II. Good value, but has an IBM-look about it. Green tint is annoying. Requires Apple video card. $549. Classic Components, 1490 Artesia Blvd., Gardena, CA 90247 (Jun 88)

CMS S-140 SCSI Hard Disk is a very fast, high-capacity SCSI hard disk with a unity interleave and average access time of 18 msec. Holds 140M. Help, file transfer, and tape back-up commands built in. Hard Disk Partition is a useful DA. Comes with a 6 ft. SCSI cable. $2995. CMS Enhancements, 1372 Valencia Ave., Tustin, CA 92680. (Jul 87)

DASCH is an external RAMdisk available 1/2, 1, and 2M sizes. Connects to a serial port. Speeds up operations 200 to 300%. Can be used as a printer buffer. Works with all Macs. 512K, $395; 1M, $450; 2M, $545. Western Automation-Laboratories, PO Box 3438, Boulder, CO 80307. (Feb 87)

Data Frame 40XP is a very fast, very quiet 40-meg external SCSI hard drive. Comes with a good and complete set of utility software. About as fast as a SCSI drive can be. Requires SCSI port, 512K+, new ROM. $1899. SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043.

DaynaFile hooks up to a SCSI drive to read MS-DOS disks in the Mac environment. Use Mac applications to manipulate data created with an IBM PC. Comes in both 5-¼ and 3-½ inch formats. $595 for single floppy. Dayna Communications, 50 S. Main St., 5th Floor, Salt Lake City, UT 84144. (Jan 88) ★'87 Eddy

Felix is an optical-tracking graphics tablet that replaces a mouse. Precision mode gives pixel by pixel control. Doesn't collect dirt like a mouse does. The 6-inch square device is designed primarily for right-handed people. Works with Mac Plus. $149. Lightgate, 6202 Christie Ave., Emeryville, CA 94608. (Sept 88)

FX-20 is a good 20-meg external hard drive. Good utility software. Reliable and reasonably quiet. Sits next to Mac, has a large, oddly shaped case. Requires SCSI port, 512K+, new ROM. $1199. General Computer, 215 First St., Cambridge, MA 02142. (Feb 87)

Hard Disk 20SC is Apple's 20-meg SCSI hard disk. Reliable, fairly noisy unit. Good utility software, but no back-up yet. Requires cable and terminator ($80). Requires SCSI port, 512K+, new ROM. $1299. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Feb 87)

Hewlett-Packard ColorPro Graphics Plotter is an eight-pen desktop plotter that requires third-party software to drive it. Fonts are limited to an optional Graphics Enhancement Cartridge that requires some BASIC programming. $1295. Hewlett-Packard, 16399 W. Bernardo Dr., San Diego, CA 92127. (Feb 88)

HyperDialer provides an interface between a phone and your Mac so you can "dial" a number using one of the Rolodex-type programs, like SideKick, Focal Point or QuickDex. Hooks up between the Mac's sound port and a telephone handset. Requires 128K. MultiFinder friendly. $39.95. DataDesk International, 7651 Haskell Ave., Van Nuys, CA 91406. (Sept 88)

ImageMaker shoots 35mm color slides direct from the Mac. Supports most presentation software. Uses patterns to represent colors. Not fully compatible with the Mac II. Requires

MINIFINDERS

512K+. $4995. MacDriver software, $149. Presentation Technologies, 743 North Pastoria Ave., Sunnyvale, CA 94086. (Feb 88)

IS/ONE tablet with **Penworks** software lets you use a cord- ★★★½ ed or cordless pen or mouse and a high-res tablet for precise graphics input. Minor bugs with some applications and DAs. Keystroke macros can be launched from the tablet. Minimal documentation. Requires 1M+. $595 to $1145. Kurta, 4610 S. 35th St., Phoenix, AZ 85040. (Jan 88)

Jasmine Direct Drive 50 is a very quiet 1:1 interleave 50 megabyte ★★★★★ hard drive and one of the fastest SCSI drives around. A small fan keeps it cool, but it's still quiet. $1159. Jasmine Technologies, 555 De Haro St., San Francisco, CA 94107. (Mar 88) ★'87 Eddy

LaserWriter II NT is Apple's mid-priced PostScript laser printer. It's ★★★ faster than the LaserWriter Plus, with blacker blacks. Gray scale is less even than that of Plus. Requires 512K+. $4599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May 88)

Laser Writer II NTX is Apple's top-of-the-line PostScript laser print- ★★★★½ er. 68020 chip makes it very speedy; expandable to 12M; SCSI hard disk can be attached for fonts. Requires 512K+. $6599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May 88)

LaserWriter II SC is Apples's low-end QuickDraw laserprinter. Can ★★★ be upgraded to NT or NTX; reasonably fast. Requires 1M+. $2799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May 88)

MacADIOS II is a hardware and software interface for laboratory ★★★★ instruments. Standard configuration samples up to 142 kHz. Documentation is sketchy. $1290 for Macintosh II-ready data acuisition card; $600 for MacADIOS II software interface. GW Instruments, 264 Msgr. O'Brien Hwy., Cambridge, MA 02141. (Jul 88)

MacBottom 45 SCSI and Internal Modem has a modem that fits ★★★★½ into the top half of the 45-megabyte SCSI hard-drive case. Comes with HFS Backup and Eureka. $1795. PCPC, 4710 Eisenhower Blvd., Tampa, FL 33634.(Oct 87)

MacBottom HD21 is a very low (about 2 inches high), external 20- ★★★★★ meg hard drive. Fits under the Mac. Very quiet, very reliable. Good utility software, including HFS Backup. Requires SCSI port, 512K+, new ROM. $1195. PCPC, 4710 Eisenhower Blvd., Tampa, FL 33634. (Feb 87) ★'86 Eddy

MacCharlie's components slip around the Mac and convert it into ★★★★ an IBM PC clone. Amazingly, it works well. The enlarged keyboard has a few bugs but is a joy to use. $995. Dayna Communications, 50 S. Main St., Salt Lake City, UT 84144. (Dec 85)

Macintizer is a graphics tablet and absolute positioning device that ★★★★ replaces the mouse. Various scales are possible. $599. GTCO Corp., 7125 Riverwood Dr., Columbia, MD 21046.

MacLarger is a 12-inch external monitor for 512K machines ★★★ on up to the SE. Displays the same number of pixels as an internal monitor, only one-third larger. Bigger and brighter, but less crisp than the Mac's own screen. $449. Power R, 1606 Dexter Ave. North, Seattle, WA 98109. (Apr 88)

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MINIFINDERS



MacPacq transforms the Macintosh into a digital oscillo-
★★★ scope, waveform generator, and chart recorder. PacqManager software expandable via external routines in Turbo Pascal and other languages. Version 1.03 reviewed. $995. Biopac Systems, 42 Aero Camino, Goleta CA 93117. NCP (Jul 88)

MacRecorder is an easy-to-use sound digitizer. Includes software
★★★★½ to turn sounds into HyperCard buttons, mix sounds, add special effects, and convert sound formats. Stereo recording possible on a Mac II. Requires 512K+. $199, Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. NCP (Jun 88)

MacSnap Plus 2 is a 2M memory upgrade for the Mac Plus. The
★★★★ board has 256 kilobit chips. User installable. Not compatible with existing big screens or internal hard disks, and can't be expanded further. $399. Dove Computer, 1200 North 23rd St., Wilmington, NC 28405. (Jun 87)

MacTable is an elegant Danish worktable that holds a Mac and
★★★★½ printer with room to spare. The 30-inch deep by 60-inch wide table is made of particleboard and must be assembled. Cabinet is optional. Table, $289; cabinet, $139. ScanCo-Furn, PO Box 3217, Redmond, WA 98073-3217. (Mar 88)

MacTablet is a stylus-driven graphics tablet. Users can easily
★★★★ sketch or trace art using this absolute-positioning device. Has a working area the size of the Mac screen. Allows concurrent use of the mouse. $495. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430. (Jan 86)

MacTilt/MacTilt SE is a Mac (and external drive) holder that allows
★★★★ a full range of swiveling and tilting. Very strong, this well-made unit is also very easy-to-use. $99.95. Ergotron, PO Box 17013, Minneapolis, MN 55418.

MacVision is a digitizer that uses an ordinary video camera for
★★★★ input. Capable of extremely fine results and special effects. Easy to use and well-documented. $349.95. Koala, 269 Mt. Hermon Rd., Scotts Valley, CA 95066.

Mac-101 is a keyboard alternative that has a good feel to it. Has a
★★★★ keypad, 15 function keys, and more. The 101-Keys desk accessory lets you define macros. Comes in an ADB version for the SE and II. Requires 512K+. $169.95. DataDesk International, 7650 Haskell Ave., Van Nuys, CA 91406. Software NCP (Apr 88)

Magic Digitizer is a hardware digitizer that works with video cam-
★★★★ eras. With LaserMagic software you can generate 300 dpi images (in PostScript). Requires 512K+. Digitizer with Magic software, $399.95; LaserMagic software, $49.95. New Image Technology, 10300 Greenbelt Rd., Seabrook, MD 20706. NCP (May 87)

Microtek MSF-300C is a 300-dpi flatbed scanner. Really fast when
★★★½ used with optional MS-SCSI/C adapter. Comes with VersaScan Plus software (NCP) to scan and manipulate image. Saves images in a number of formats including TIFF and MacPaint. $1895. Microtek Lab, 16901 S. Western Ave., Gardena, CA 90247. (Dec 87)

Migent Pocket Modem is a 300/1200 baud portable modem
★★★½ about the size of a 3 X 5 index card. Comes bundled with *MacTerm* 2.0, Borland's telecom DA. Manual is confusing, and tech support is minimal. $259. Migent, 865 Tahoe Blvd., Incline Village, NV 89450-6062. (Nov 87)

Mouse Mover is a mouse pad-type surface that snaps onto
★★★★½ the bottom of the mouse like a roller skate, freeing it up to glide over desk or mouse pad with ease. 99 tiny ball bearings at three strategic points. Mouse glides faster and saves on mouse wear and tear. $19.95. Magnum Software, 21115 Devonshire St., Chatsworth, CA 91311. ★'85 Eddy

Moustrak is a fabric covered foam mousing pad. It will increase the
★★★★ efficiency of your mouse while helping to keep it clean. Pad comes in a variety of colors. Particularly useful in the typical office desktop environment. $10. Moustrak, 3047 St. Helena Hwy., St. Helena, CA 94574.

NetModem is a 1200-baud modem that can be accessed by all
★★★★ users on an AppleTalk network. The modem's display lights and the dial tone are simulated on screen. Requires 512K+. $599. Shiva, Suite 1200, 222 Third St., Cambridge, MA 02142-9919. (Feb 88)

NoLabelSystem is a plastic permanent labeling system in which
★★★★ users slide new tabs into a transparent plastic case on the disk. The tabs stick out of the case slightly, making them easier to read while in the drive. $19.45. Weber & Sons, 3468 Hwy. 9, Freehold, NJ 07728.

One Plus One is a user-installable memory upgrade for a Mac Plus.
★★★★½ Adds 1 megabyte of RAM to the 1M already there. Simple one-evening project. Includes MacBreeze, an excellent small fan. Requires Mac Plus. $375. Levco, 6160 Lusk Blvd., San Diego, CA 92121. (Aug 87)

Personal LaserPrinter is a non-PostScript laser printer at a great
★★★★ price. Clumsy workarounds required in some applications. Printing can be slow. Requires 1M+. $1999; Fonts Plus, $299. General Computer, 580 Winter St., Waltham, MA 02154. (Apr 88)

Personal Writer PW15 S is a tablet-based handwriting recognition
★★★★ system that also allows graphics and macros. Number of misread characters is too high for general word processing. Requires 1M+. $895. Personal Writer, 1801 Ave. of the Stars, Los Angeles, CA 90067. Software NCP (Mar 88)

PhoneNET is an AppleTalk-compatible network. Network can
★★★★★ be up to 3000 ft in length. In-place, unused phone cabling can be used for network, and can be combined with AppleTalk on same network. $49 per node. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. (Dec 86) ★'87 Eddy

QMS-PS 810 is an 8-page-per-minute, 300-dpi PostScript laser
★★★½ printer that competes with the LaserWriter NT. 2MB of RAM is standard; upgradable to 3MB. Emulates HP LaserJet, 7475 (HPGL), and Diablo 630. $5495. Laser Connection, 7852 Schillinger Park West, Mobile, AL 36608 (Jul 88)

QuickShare adds a SCSI port to an IBM PC for easy connectivity
★★★ with a Mac. Can use an IBM's hard disk to run Mac applications. Requires SCSI port. Mac II and MultiFinder friendly. Version 1.24 reviewed. $465. Compatible Systems, P.O. Drawer 17220, Boulder, CO 80308. (Jun 88)

SuperRam 2 and SuperRam 4 are 2- and 4-megabyte RAM up-
★★★½ grades. Should be dealer installed but can be (carefully) user installed. SuperRam 2 includes RAM adaptor module, 1-meg memory module, modified power cable, jumper and fan. SuperRam 4 adds power supply booster and two 1-meg memory modules. Not compatible with most big screens. $499. SuperMac Technology, 295 N. Bernardo, Mountain View, CA 94043. (Oct 87)

ThunderScan replaces the ribbon cartridge in an ImageWriter,
★★★★ which is required to use it. Laser scans art that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are created or afterward. $249. Thunderware, 21 Orinda Way, Orinda, CA 94563. ★'85 Eddy

TimeWand is a bar-code reader with a built-in time/date stamping
★★★★ clock. Can be used with TimeWand Manager software, a database that's extensive though difficult to use. Poor docs, but good support. Requires 1M+. TimeWand 2K version, $198; TimeWand Manager, $489. Videx, 1105 NE Circle Blvd., Corvallis, OR 97330-4285. (Dec 87)

TV Producer is an add-in card that overlays Mac graphics and text
★★★ onto a video signal. Software is clumsy to use. Requires Mac II, Apple video card, and video souce. $599. Computer Friends, 14250 NW Science Park Dr., Portland, OR 97229. Software NCP (May 88)



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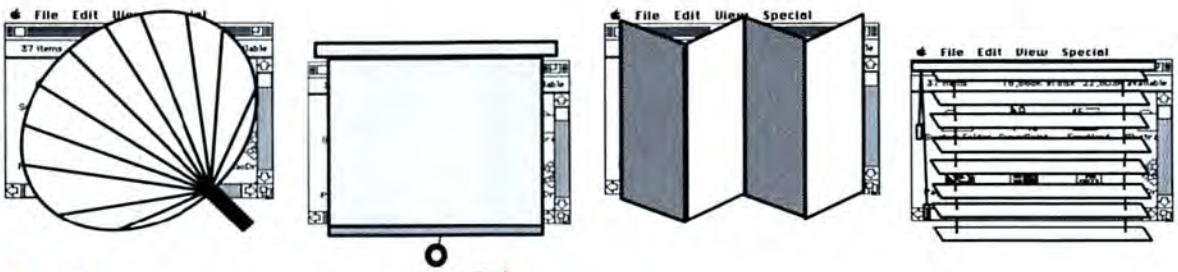
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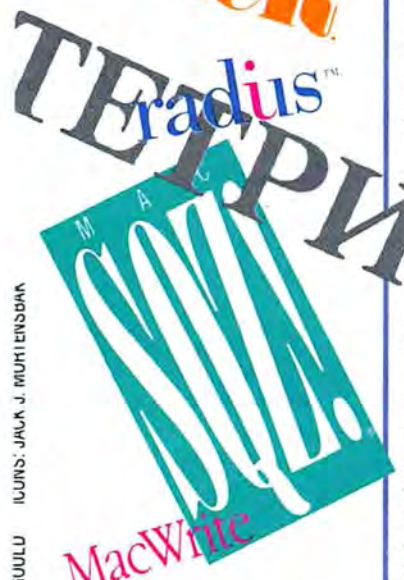
SCRaPBOOK

EDITED BY KRISTI COALE AND JON ZILBER

MAC ON THE STREET

CAPITAL PUNISHMENT

Desktop computing is on the verge of a bold new era.



What's in a name? Something old, something uppercase, something borrowed, something just in case.

PHOTOS: PETER A. GOULD ICONS: JACK J. MUNTENSHAK

That darling of high-tech marketing — the InterCap — appears to be on the wane (and, ladies and gentlemen, we all know *just* how painful *that* can be). The InterCap, for those arriving late, is the de rigeur form for product names in the Mac market, combining two separate words or prefixes and capitalizing one or more of the internal syllables. MacWrite and MacPaint started it all, and others (like MacDraft, PageMaker, and, er, *MacUser*) were quick to follow.

New times demand new ideas. The next trend was a spate of ExclamaNames! like Pyro! and Ready, Set, Go!, which used punctuation to add excitement to their products. Then there's Mavis Beacon Teaches Typing! — is it a name, a résumé, or the first line of a Hemingway novel? Some names defy explanation: MicEdGames? WordPerfect settled on the same name for both its product and the company (maybe trademarks are scarce in Utah).

The winds of marketing seem due for a shift — but whether to uppercase or lowercase, we're not sure. Consider: In press releases, Informix spells its forthcoming spreadsheet as Wingz, but the product's logo looks more like WingZ. Could this be the start of somthing big (as in uppercase) — the EndocaP, perhaps?

What's next in product and corporate naming? Foreign characters? Exotic punctuation (like, say, an interrobang)?! Is the Hyper- prefix already becoming stale? Should we herald the return of the inverted R? Send your suggestions, predictions, and fears to Mac in the Street, *MacUser,* 950 Tower Lane, 18th floor, Foster City, CA 94404.

— *Jon Zilber*



Speaking of The Rack (Mac 'N' Stein's elegant computer center), the following was overheard in a local restaurant: "How's the rack of lamb?" "Not as bad as the lack of RAM." (Wild horses couldn't get us to say which Freditor of *MacUser* was responsible for this one.)

RACK 'EM UP

A Mac's home should be its castle; it can be withThe Rack from Mac 'N' Stein. This oak and glass palace keeps your printer, hard disk, modem, paper supplies, disks, software, manual, and *MacUser* libraries all in one dust-free, fan-cooled place. There's plenty of room for an Adobe abode, a ResEdit residence, a MORE floor, a dBASEment, or (when it ships) a Wingz wing. Fiberoptic "Lightbenders" route status information from the LEDs on your peripherals to a central display panel.

The Rack will make your Mac feel like royalty — although it could cost a king's ransom, with prices starting at $988. (But every ruler should have the best cabinet money can buy.) Contact Mac 'N' Stein at 1706 North Vine Street, Hollywood, CA 90028; (213) 462-3598.

— *Jon Zilber*

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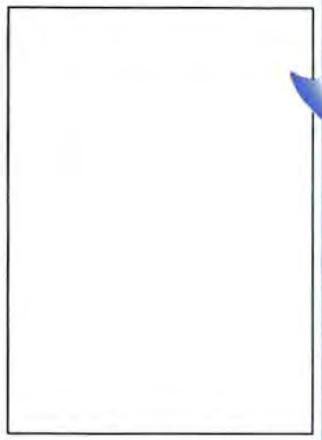
ON THE ROAD AGAIN!

Mac 54, where are you? Mac's gotten its act together and is taking it on the road. Rolling out on the highways and byways is the Colby Mobile Mac, a modular repackaged system designed to travel in police, fire, ambulance, and civil-defense vehicles.

Proving that you can, indeed, take it with you, the police department in Redwood City, CA, is trying out the system. So far, they've found that things really heat up when they use the system. Literally. It is recommended that you not use the system in vehicles that don't have air conditioning. If your work must follow you wherever you go, this system is for you — as you can file reports, check records, etc.

For a cool $1,500 (approximately), you get a 7-inch CRT monitor, removable CPU unit, a 12-volt DC power unit, and a keyboard with trackball. Weighing in at 6.5 pounds, the Mobile Mac is easily transported in a briefcase. For desktop applications, the Colby system can be used on a Mac 512, Plus, and SE. Those of you who still have the 512s can upgrade for $200.00. For more information, call Colby Systems at 4723 North Warren Avenue, Fresno, CA 93705; (209) 222-4985.

— *Kristi Coale*



You got white space, we got white space.



Yes, Virginia, there *is* life outside Silicon Valley. If you're tired of hearing about the exploits of Bill Atkinson, Guy Kawasaki, and Danny Goodman, tell us about your own favorite Mac evangelist: your local Mac retailer, user group, Mac guru, consultant, laser parlor, or the guy in your office who finally convinced the MIS director to get some Macs into the department by bringing in work he did on his own machine at home. Send your Hometown Hero nominations to H², *MacUser*, 950 Tower Lane, 18th floor, Foster City, CA 94404. We'll publish the most interesting tales in future issues.

— *Jon Zilber*

HYPERACTIVE HYPE

You Can't Tell The Players Without A Program Dept.: Three new magazines covering the wide world of interactive relational media have hit the newsstands. *HyperAge* (subtitled "The Journal of HyperThinking") focuses on HyperCard and other hypertext systems (like Ted Nelson's Xanadu and Owl International's Guide) and related technologies (like CD-ROM and videodisc). *HyperMedia* covers a broader gamut of interactive media, covering both computer- and noncomputer-based interactive media (and Nelson-based interactive media, such as Xanadu). *HyperLink* is specifically targeted at HyperCard developers (and is notable for not running an interview with Ted Nelson in its premier issue).

For more information, contact *HyperLink*, P.O. Box 7723, Eugene, OR 97401; (503) 484-5157; *HyperAge*, 5793 Tyndall Avenue, Riverdale, NY 10471-2113; (212) 601-2832; and *HyperMedia*, 6400 Hollis Street #12, Emeryville, CA 94608; (415) 653-3307.

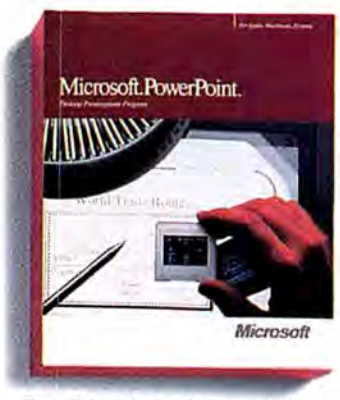
— *Jon Zilber*



In case you've been slumbering in hypernation for the last year, hyperstuff is hot these days. Three new magazines are ready to bring you all the latest hyperbole.

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And remember, the best part of doing a presentation all by yourself comes afterward.

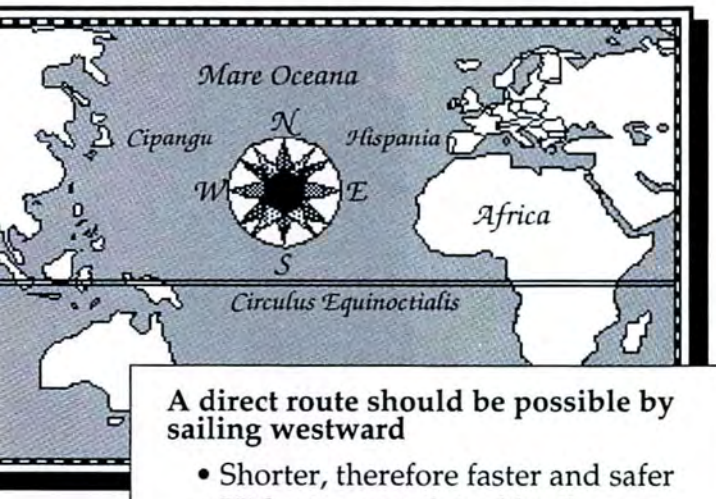
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A NEW TRADE ROUTE



A direct route should be possible by sailing westward

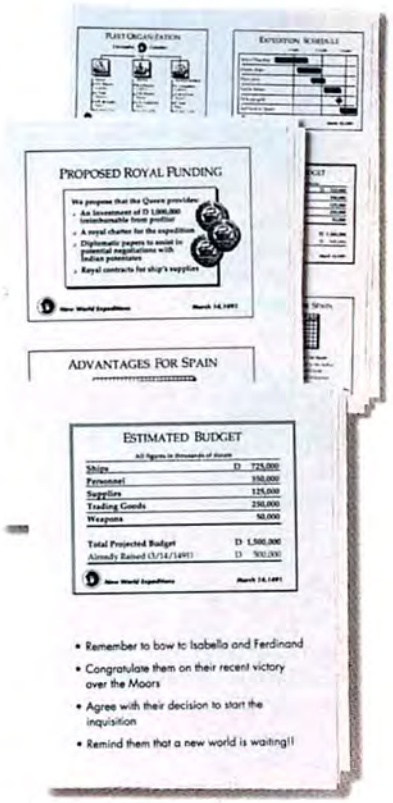
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World Expeditions —— **March 14, 1491**

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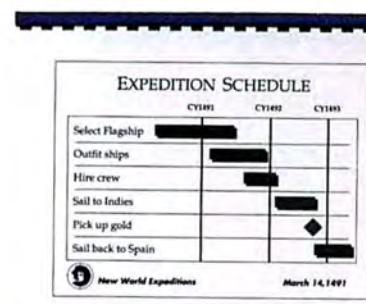
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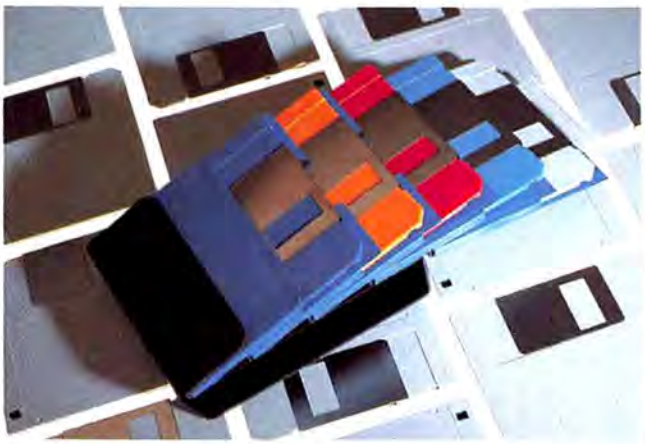


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SCRaPBOOK



What the well-dressed disk is wearing these days — the latest European fashions.

DISK ACCESSORIES

Able was I, ere I saw Elba's new line of disk cases and holders. My favorite is a clip that holds disks on loose-leaf binder rings — the disks slip in and out with ease yet magically stay snugly in place. A set of three (which you can snap together in a row) costs $4.50. (At that price, software publishers have no excuse for using those awkward vinyl disk pockets.)

If you're a believer in Velcro for Velcro's sake, you'll love Elba's travel case ($19.95) that holds up to five disks Velcro-tight and lets you fan them out whenever you feel the need to shout "Pick a disk, any disk!" Elba's disk mailers feature plastic rivet closures that seal the case (and also provide proof-of-opening for shrink-wrap licensers). Elba's desk-bound cases reveal their European heritage with distinctive styling (and pricing: $12.95 for a 10-disk case).

Elba's U.S. distributor is ICOP, 318 East Howard Avenue, Decatur, GA 30030; (404) 373-3683. (And for more palindromes like the opener, see the wonderful book *Madam I'm Adam,* by William Irvine; $5.95 from Charles Scribner's Sons.)

— *Jon Zilber*

CRASH INTO THE MAC

Normally, the word *crash* is negatively associated with computers. But as far as Knowledge Engineering and Marvel Comics are concerned, however, it may mean the start of a whole new way to do a comic book. Holy cow, Batman! It's Iron Man Crash, the first computer-generated graphic novel!

Crash was created using Lithographer, a program developed by William Bates that supports other Mac software. Mike Saenz, creator of an infamous risqué "art" program, did all the artwork and writing. If you're familiar with his past work, you'll recognize some of it here.

Using low-resolution one-bit-plane bit maps created in his program ComicWorks, Saenz imported the images to Lithographer to add color. Lithographer uses such coloring tools as Left to Right, Top to Bottom, and Concentric and Logarithmic ramping to blend fields. Other software used includes Pro 3D, which is responsible for the 3-D effect of Fury's Osprey, Stark's Limosene [*sic*], the robots, and the shield. Illustrator was used on the logos and cover art.

With all this technology available, you'd expect brilliant, sharp images. Unfortunately, Crash lives up to the negative connotations attached to its name. Illustrations are flat and the resolution is poor. Guess you'll have to tune in again — same Bat time, same Bat channel — for an improved version. But for those comic-book buffs anxiously waiting to hop into their Batmobiles and get Iron Man Crash, it will be available in bookstores and at comic-book stands by the time you read this.

— *Kristi Coale*





E-MAIL IMPERSONATOR

What looks like a Mac but acts like a Tektronix terminal? Two new programs (due out by press time) from Grafpoint let you substitute a Macintosh II for a Tektronix graphics terminal. TGRAF-07 ($995) and TGRAF-15LR ($1,495) emulate Tek 4107 and 4115 terminals, respectively. Both programs can be networked to mainframe computers to run applications developed for use with dedicated graphics terminals. For more information, contact Grafpoint at 1485 Saratoga Avenue, San Jose, CA 95129-4934; (408) 446-1919.

— *Jon Zilber*

PHOTOS: PETER A. GOULD ICONS: JACK J. MORTENSBAK

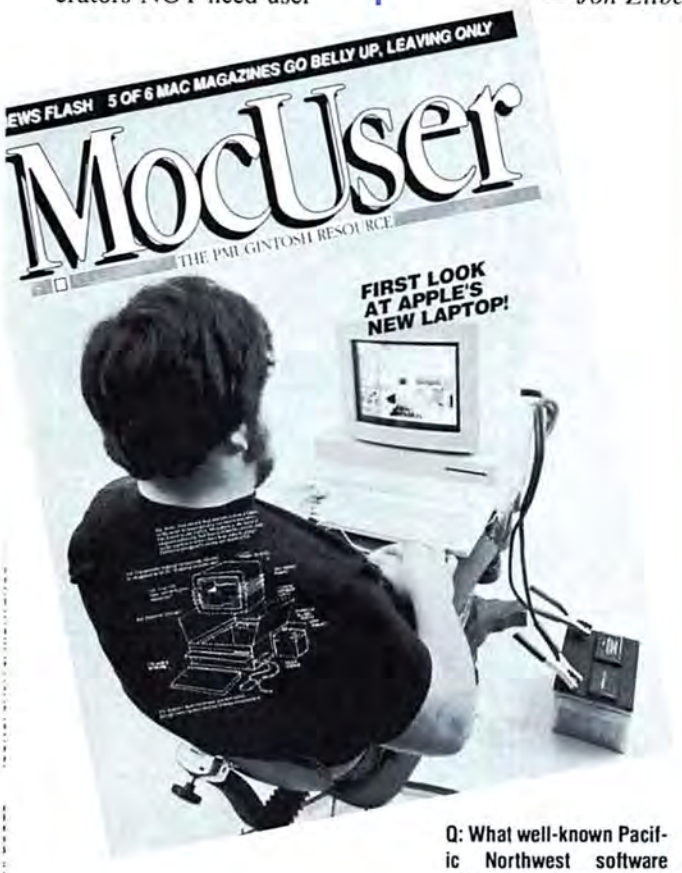
SCRaPBOOK

TO MUG A MOCKINGMAC MAG

Familiarity may breed contempt, but it doesn't always have to spawn a lawsuit. Case in point: the cover of the April issue of *Mouse Tracks,* the newsletter of the Portland (Oregon) Macintosh Users Group (PMUG), which borrowed the look-and-feel of ours truly, *MacUser.* The issue included a discussion of "Why do refrigerators NOT need user groups?" and a review of MacKiller, the game from True Blue Systems in which the stakes are real: Blue Meanies fight for circuit-board components in your very own Mac.

For more information on this user group with a sense of humor (not to mention PMUG College training classes, Mac-literacy camps, a library of public-domain software, and discounted Mac supplies for sale), contact PMUG at P.O. Box 8895, Portland, OR 97207-8895; (503) 228-1779.

— *Jon Zilber*



Q: What well-known Pacific Northwest software publisher allegedly borrowed the look 'n' feel of a certain Silicon Valley Mac proponent? (Hint: No lawyers were involved.)



TOP TEN

PAPER CLIPS

The humble paper clip holds a special place in the great chain of being in the Mac universe. It's actually two tools in one: In its original gnarled format, it's not good for much besides clipping papers together. But straighten out this amazing utensil and it becomes a virtual Swiss Army knife. After extensive research, we've compiled the following list of the top-ten Mac-related uses for a paper clip. The first two are officially sanctioned in Apple documentation; attempt the rest at your own risk.

1. Manually eject floppies from disk drive.
2. Set Apple hard disk SCSI device number.
3. Short-circuit SE fan.
4. Etch name inside Mac case, side-by-side with the Steve of your choice.
5. Jam SE fan.
6. Jam LaserWriter.
7. Unjam LaserWriter
8. Toggle disk write-protect tab.
9. Clean mouse and keyboard.
10. Clean nails waiting for enough SIMMs to run MultiFinder.

Clips ahoy!

— *Jon Zilber*

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SCRaPBOOK

BRIGHT IDEAS

Never look a gift tip in the mouth? Advice comes in all forms, and we at *MacUser* feel there's money to be made in this field — for you, at least. While this is not quite the Tip Sheet, this column is meant for a special breed of reader advice. Just send in your pointers (real tips please, no fabrications) to BRIGHT IDEAS, 950 Tower Lane, 18th floor, Foster City, CA 94404. We'll put your tips through our stringent lab tests. If yours passes and we print it, you'll receive $10!

OLD MOUSE PADS NEVER DIE

And you thought only cats had nine lives. Don't throw away that old mouse pad! They make a perfect new bottom pad for your orbital sander. Just remove the old pad, use the sanding platform to trace out a new bottom section from the mouse pad, and use sharp scissors to cut out. Apply contact cement to both surfaces (sander and top surface of the mouse pad) and, voilà! Your worn-out orbital sander is brand new.

Old mouse pads never die, they just sand away.

Don Devine
Westwood, NJ



THE HAPPY HOMEMAKER

Cleaning off all the dust that accumulates on your computer screen every day or two can get to be quite a pain. The higher voltage of the color screen for the Mac II just accumulates dust that much faster. Many of us have a pad of Post-it notes on our desks next to the phone. With a little practice, you'll find your screen will be cleaner when dusting with a Post-it note as opposed to shoving it into one corner with a tissue. Just go at the screen with a wiping motion and very little pressure — otherwise, you may find yourself losing the Post-it because it sticks to the glass.

Al Duester
Woods Hole, MA

PRIVATE LABEL SCOTCH

A simple, neat, and inexpensive way to label disks is to use Scotch Magic Plus Removable Transparent Tape, the nonsticky tape. Simply tear off a piece of tape (or several, for more room to write), stick it on the diskette, and write on it to your heart's content. The Scotch Magic Plus tape has a special surface to write on and sticks well to the disk but also peels off easily whenever you change the contents of the disk.

Be sure to get the nonstick variety, which comes in a blue box. It was designed as a removable tape for paper, but it also works great on disks.

Robert A. Kemppainen
Cambrose, Alberta

HIT LIST

In response to the question "What's selling at Egghead Discount Software?," here's Egghead's Hit List of the ten top-selling Mac programs for May.

1. **Microsoft Word** — Microsoft
2. **PageMaker** — Aldus
3. **Microsoft Excel** — Microsoft
4. **FullWrite Professional** — Ashton-Tate
5. **MacProject II** — Claris
6. **TOPS** — TOPS
7. **MacDraw** — Claris
8. **Microsoft PowerPoint** — Microsoft
9. **Cricket Presents** — Cricket
10. **4th Dimension** — Acius

DO YOU KNOW ME?



A Solid Gold dancer reject?

MacUser **was produced using the latest in desktop publishing technology, including the complete set of 64 Crayola Crayons, with built-in sharpener, and state-of-the-art software such as Silly Putty 2.0 for image transfer. We would like to acknowledge the following people and other sources for their talent: The photo on page 200 and the graphics on pages 10-25, 56-87, 150-278, and 300-450 are courtesy of the *MacUser* Art Dogs; the moose on page 25 was played by Steve Reeves; the literary references on pages 46, 102, and 245 are courtesy of Bartlett's; the not-so-literary references on page 52 are courtesy of *Mad*; and key grips: Rosencrantz and Guildenstern. Over 1 billion served.** **Copyright 1988 Ziff-Davis Publishing Company All patents pending. Don't use medication unless otherwise prescribed by a physician. No bending, folding, stapling, or mutilating. Just say no. Please cover your right eye and read this: ! † ∀ ∩ ∝ ∫ ∁ ∃ ∂ ∈ ∉ ∑ ∫**

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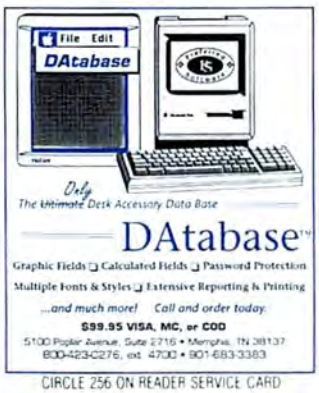
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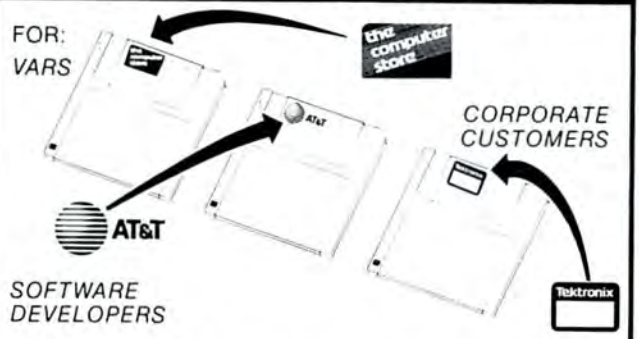
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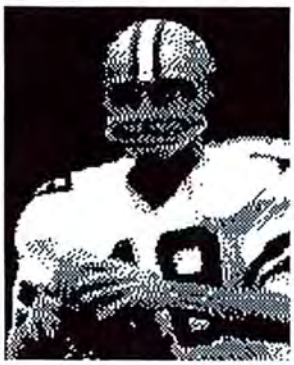
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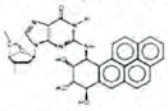
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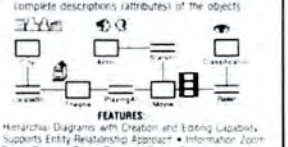
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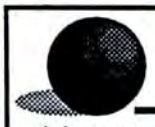
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by John C. Dvorak

Workgroup Future

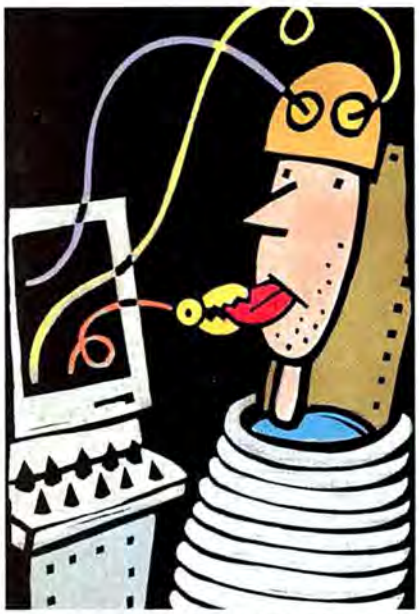
I must have passed out at work that foggy August afternoon. When I came to, I was in a cold sweat and Jane, my secretary, was pulling on my arm. "Mr. Dvorak! Wake up," she urged. "The Workgroup Productivity seminar is starting." She darted off down the hall.

I rose and looked around my cubicle. Proud of the Hermann-Miller-gray walls that enclosed me, I always felt safe and cocoon-like inside my cubbyhole. What I didn't like was the fact that I couldn't make personal phone calls at this new job because everyone listened to everything over the silence in the giant room. I did relish the tomblike quiet, though. It was peaceful. Anyway, most communication was done with E-mail or MCI mail or any number of quiet outlets. Nothing personal could be done on any of the personal workstations, though. Not since Jerry Popkin was fired for sending erotic memos to someone in the typing pool. Apparently the company had been monitoring all the messages ever since the new network was installed a year ago. Nobody bothered to mention it to anyone until Jerry got the heave-ho. It seems that Sally Johnson, the head of the typing pool, and the target of Jerry's flirtations, was married to one of the VPs.

"Who knows what terrible evidence they've accumulated over the past year," groused Tom Sanborn, one of the accountants, as he headed down the hall with the rest of us to the seminar. Tom was always complaining.

The workgroup seminar was given by Harmony Computing Workshops. We'd be taught how to use Harmony II, an elaborate work log monitoring system that was guaranteed to make us all more productive and at the same time less stressed out.

"Computer-assisted cooperation and organization will set you free! You will function in your role effortlessly," said the man with the moustache who paced back and forth on the stage as he fiddled with a remote-control device that worked the slide show. On the screen were projected the reasons our lives would be improved. All thanks to the computer and workgroup software from Harmony. The crowd of 300



employees took copious notes. Some guy sitting next to me suggested that workgroup software was a better idea than personal computing. "Probably better than sex too!" he said as his eyebrows rose. "It will set you free." That's when it happened.

Lenny Benson stood up and yelled "Baloney!" Who knows what got into him. Nobody remembers if he had personal problems. Benson was too straight to be on drugs. The hall became dead silent. A spotlight moved over and focused on Benson.

"Don't you all see!" shouted Benson. "They're making us into robots with this nonsense. Personal computers weren't invented for this crap. They were invented to enhance the individual. They are for use by an individual. An extension. Being hooked into a network and a workgroup is like having your mind wired to some boss's brain. Like having to be on a lie detector full-time. It's oppressive. This baloney frees nobody." Benson looked around him, his face anguished. A tear seemed as though it were about to fall from an eye. A din of mumbling and whispering filled the room. Suddenly the security guard, Steve Groppo, stood up, pulled a .45 caliber automatic pistol from beneath his coat, turned, and fired three quick shots into Benson, who dropped like a rock back into his chair and fell forward onto the table, ruining his seminar materials in the process.

The hall erupted with applause. I was annoyed by the interruption and refused to clap until the guy next to me elbowed me with a gesture that indicated that applauding was the thing to do. I obliged, hoping the seminar would get back to business.

The spotlight lingered on dead Benson for a moment then returned to center stage where the guy with the moustache stood. "As I was saying," he continued while he clicked off a few slides, "we at Harmony believe that computers set you free by organizing your life for you. The less you have to think as an individual, the greater the reward for the group. Since the sum of the parts is less than the value of the whole, the difference is a net gain that the parts benefit from. This is called profit. Get it?"

The entire hall moaned a low "Yes!"

After four hours the seminar was over. We each left with a new vinyl-covered briefcase with the Harmony Software logo neatly emblazoned on the side. In the briefcase was the newest version of Harmony II.

When I got back to my cubicle, I found Donna Jones sitting in my seat. She was Benson's girlfriend. Tears welled up in her eyes as she handed me an envelope. "Lenny wanted you to have this note. He figured something bad was going to happen today. He always thought that you were the most free thinker in the company." She turned and glanced at an old Fillmore Auditorium poster I had pinned to one of the foam insets of my cubicle. The company had asked its employees not to post any unapproved decorations, and I had to fight to keep the poster. I still figure that I missed two promotions because of the thing. Actually I hated it. She left and I read the memo from Lenny. It said: "This company is ruining our lives. This software from Harmony is sinister. We have no lives anymore. We can't think for ourselves. This workgroup stuff is just tightening the reins. They'll try to kill me if I say anything."

I shook my head. Poor deluded Lenny, I thought to myself. I crushed the note into a ball and lobbed it into the can. "Perfect shot! Two points! All *right*!"

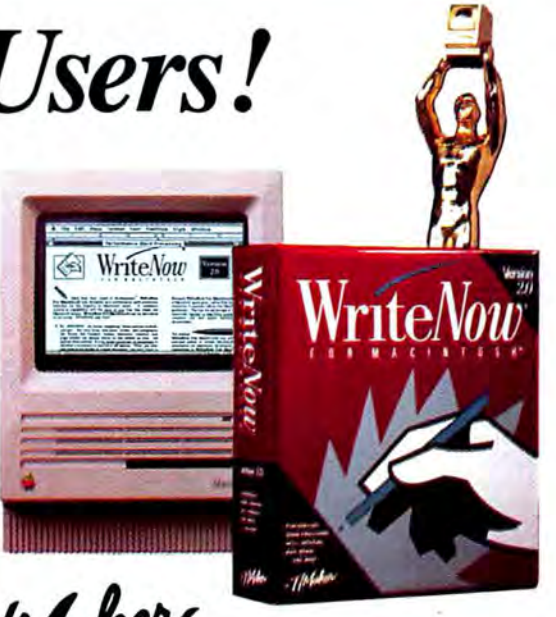
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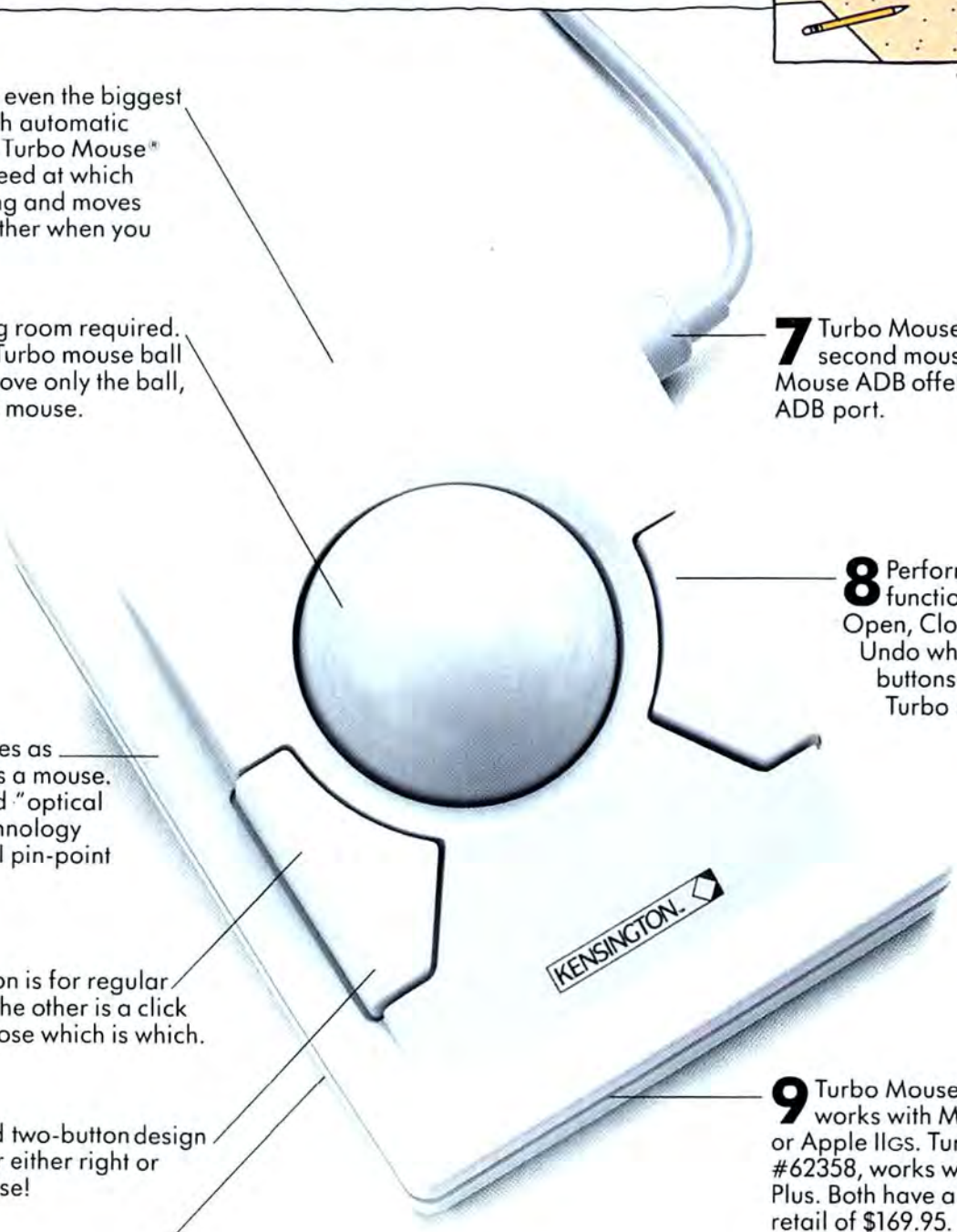
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